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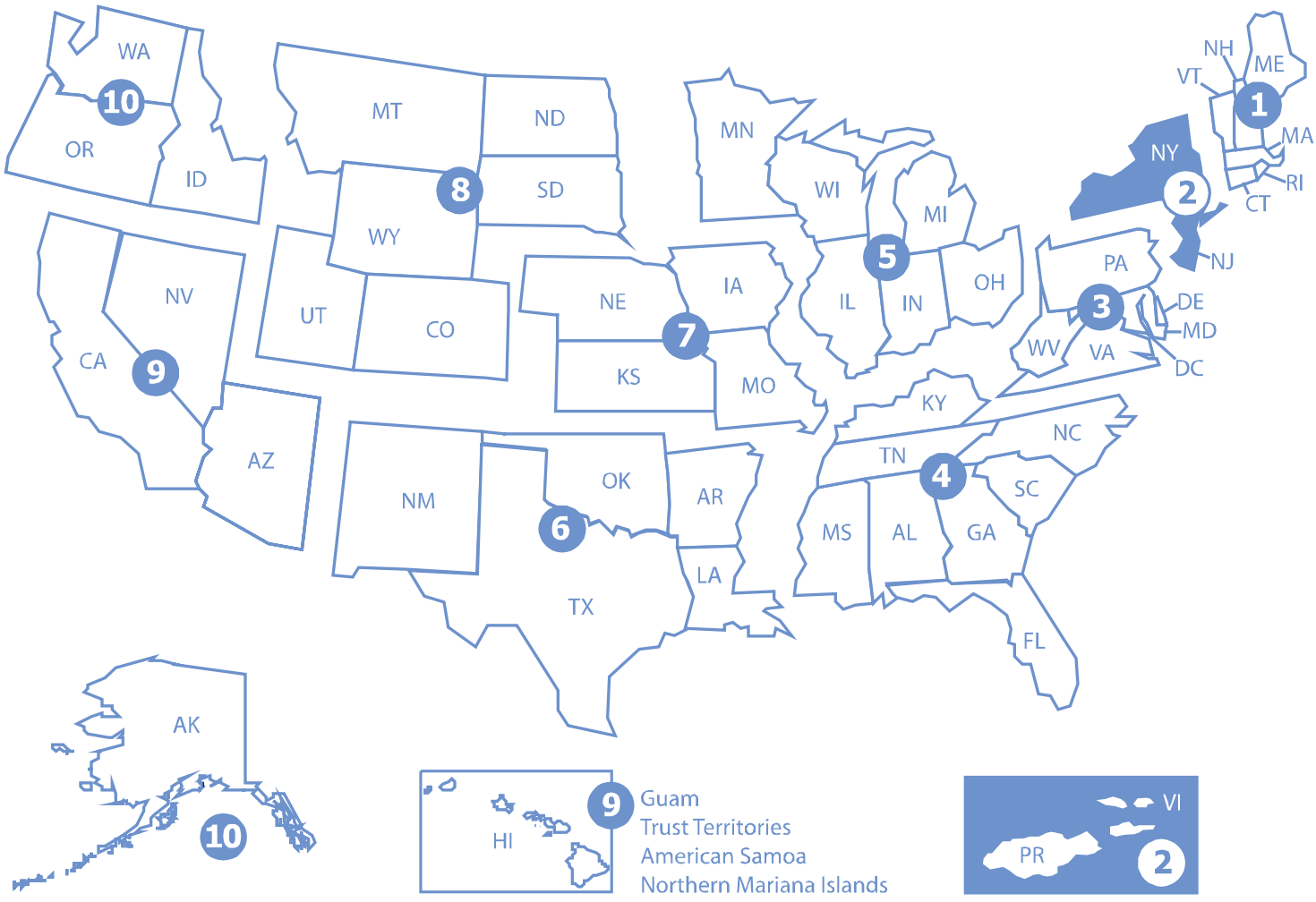
Office of Solid Waste and Emergency Response

Support Document for the Revised National Priorities List Final Rule – Pierson's Creek



Support Document for the Revised National Priorities List Final Rule

Pierson's Creek

September 2014

Site Assessment and Remedy Decisions Branch
Office of Superfund Remediation and Technology Innovation
Office of Solid Waste and Emergency Response
U.S. Environmental Protection Agency
Washington, DC 20460

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Executive Summary

Section 105(a)(8)(B) of CERCLA, as amended by SARA, requires that the EPA prepare a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. An original National Priorities List (NPL) was promulgated on September 8, 1983 (48 FR 40658). CERCLA requires that EPA update the list at least annually.

This document provides responses to public comments received on the Pierson's Creek site, proposed on December 12, 2013 (78 FR 75534). This site is being added to the NPL based on an evaluation under EPA's Hazard Ranking System (HRS) in a final rule published in the *Federal Register* in September 2014.

Introduction

This document explains the rationale for adding the Pierson's Creek site in Newark, New Jersey to the National Priorities List (NPL) of uncontrolled hazardous waste sites and provides responses to public comments received on this site listing proposal. The EPA proposed this site to the NPL on December 12, 2013 (78 FR 75534). This site is being added to the NPL based on an evaluation under the Hazard Ranking System (HRS) in a final rule published in the *Federal Register* in September 2014.

Background of the NPL

In 1980, Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. Sections 9601 *et seq*. in response to the dangers of uncontrolled hazardous waste sites. CERCLA was amended on October 17, 1986, by the Superfund Amendments and Reauthorization Act (SARA), Public Law No. 99-499, stat., 1613 *et seq.* To implement CERCLA, EPA promulgated the revised National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300, on July 16, 1982 (47 FR 31180), pursuant to CERCLA Section 105 and Executive Order 12316 (46 FR 42237, August 20, 1981). The NCP, further revised by EPA on September 16, 1985 (50 FR 37624) and November 20, 1985 (50 FR 47912), sets forth guidelines and procedures needed to respond under CERCLA to releases and threatened releases of hazardous substances, pollutants, or contaminants. On March 8, 1990 (55 FR 8666), EPA further revised the NCP in response to SARA.

Section 105(a)(8)(A) of CERCLA, as amended by SARA, requires that the NCP include

> criteria for determining priorities among releases or threatened releases throughout the United States for the purpose of taking remedial action and, to the extent practicable, take into account the potential urgency of such action, for the purpose of taking removal action.

Removal action involves cleanup or other actions that are taken in response to emergency conditions or on a short-term or temporary basis (CERCLA Section 101). Remedial action is generally long-term in nature and involves response actions that are consistent with a permanent remedy for a release (CERCLA Section 101). Criteria for placing sites on the NPL, which makes them eligible for remedial actions financed by the Trust Fund established under CERCLA, were included in the HRS. EPA promulgated the HRS as Appendix A of the NCP (47 FR 31219, July 16, 1982). On December 14, 1990 (56 FR 51532), EPA promulgated revisions to the HRS in response to SARA, and established the effective date for the HRS revisions as March 15, 1991.

Section 105(a)(8)(B) of CERCLA, as amended, requires that the statutory criteria provided by the HRS be used to prepare a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. The list, which is Appendix B of the NCP, is the NPL.

An original NPL of 406 sites was promulgated on September 8, 1983 (48 FR 40658). At that time, an HRS score of 28.5 was established as the cutoff for listing because it yielded an initial NPL of at least 400 sites, as suggested by CERCLA. The NPL has been expanded several times since then, most recently on May 12, 2014 (79 FR 26853). The Agency also has published a number of proposed rulemakings to add sites to the NPL. The most recent proposal was on May 12, 2014 (79 FR 26922).

Development of the NPL

The primary purpose of the NPL is stated in the legislative history of CERCLA (Report of the Committee on Environment and Public Works, Senate Report No. 96-848, 96th Cong., 2d Sess. 60 [1980]).

> The priority list serves primarily informational purposes, identifying for the States and the public those facilities and sites or other releases which appear to warrant remedial actions. Inclusion of a facility or site on the list does not in itself reflect a judgment of the activities of its owner or operator, it does not require those persons to undertake any action, nor does it assign liability to any person. Subsequent government actions will be necessary in order to do so, and these actions will be attended by all appropriate procedural safeguards.

The NPL, therefore, is primarily an informational and management tool. The identification of a site for the NPL is intended primarily to guide EPA in determining which sites warrant further investigation to assess the nature and extent of the human health and environmental risks associated with the site and to determine what CERCLA-financed remedial action(s), if any, may be appropriate. The NPL also serves to notify the public of sites EPA believes warrant further investigation. Finally, listing a site may, to the extent potentially responsible parties are identifiable at the time of listing, serve as notice to such parties that the Agency may initiate CERCLA-financed remedial action.

CERCLA Section 105(a)(8)(B) directs EPA to list priority sites among the known releases or threatened release of hazardous substances, pollutants, or contaminants, and Section 105(a)(8)(A) directs EPA to consider certain enumerated and other appropriate factors in doing so. Thus, as a matter of policy, EPA has the discretion not to use CERCLA to respond to certain types of releases. Where other authorities exist, placing sites on the NPL for possible remedial action under CERCLA may not be appropriate. Therefore, EPA has chosen not to place certain types of sites on the NPL even though CERCLA does not exclude such action. If, however, the Agency later determines that sites not listed as a matter of policy are not being properly responded to, the Agency may consider placing them on the NPL.

Hazard Ranking System

The HRS is the principle mechanism EPA uses to place uncontrolled waste sites on the NPL. It is a numerically based screening system that uses information from initial, limited investigations -- the preliminary assessment and site inspection -- to assess the relative potential of sites to pose a threat to human health or the environment. HRS scores, however, do not determine the sequence in which EPA funds remedial response actions, because the information collected to develop HRS scores is not sufficient in itself to determine either the extent of contamination or the appropriate response for a particular site. Moreover, the sites with the highest scores do not necessarily come to the Agency's attention first, so that addressing sites strictly on the basis of ranking would in some cases require stopping work at sites where it was already underway. Thus, EPA relies on further, more detailed studies in the remedial investigation/feasibility study that typically follows listing.

The HRS uses a structured value analysis approach to scoring sites. This approach assigns numerical values to factors that relate to or indicate risk, based on conditions at the site. The factors are grouped into three categories. Each category has a maximum value. The categories are:

- likelihood that a site has released or has the potential to release hazardous substances into the environment;
- characteristics of the waste (toxicity and waste quantity); and
- people or sensitive environments (targets) affected by the release.

Under the HRS, four pathways can be scored for one or more threats as identified below:

- Ground Water Migration (S_{gw})
  - drinking water

- Surface Water Migration (S_{sw})
  The following threats are evaluated for two separate migration components, overland/flood migration and ground water to surface water.
  - drinking water
  - human food chain
  - sensitive environments

- Soil Exposure (S_s)
  - resident population
  - nearby population
  - sensitive environments

- Air Migration (S_a)
  - population
  - sensitive environments

After scores are calculated for one or more pathways according to prescribed guidelines, they are combined using the following root-mean-square equation to determine the overall site score (S), which ranges from 0 to 100**:**

$$S = \sqrt{\frac{S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2}{4}}$$

If all pathway scores are low, the HRS score is low. However, the HRS score can be relatively high even if only one pathway score is high. This is an important requirement for HRS scoring because some extremely dangerous sites pose threats through only one pathway. For example, buried leaking drums of hazardous substances can contaminate drinking water wells, but -- if the drums are buried deep enough and the substances not very volatile -- not surface water or air.

Other Mechanisms for Listing

There are two mechanisms other than the HRS by which sites can be placed on the NPL. The first of these mechanisms, authorized by the NCP at 40 CFR 300.425(c)(2), allows each State and Territory to designate one site as its highest priority regardless of score. The last mechanism, authorized by the NCP at 40 CFR 300.425(c)(3), allows listing a site if it meets the following three requirements:

- Agency for Toxic Substances and Disease Registry (ATSDR) of the U.S. Public Health Service has issued a health advisory that recommends dissociation of individuals from the release;
- EPA determines the site poses a significant threat to public health; and
- EPA anticipates it will be more cost-effective to use its remedial authority than to use its emergency removal authority to respond to the site.

Organization of this Document

The following section contains EPA responses to site-specific public comments received on the proposal of the Pierson's Creek site on December 12, 2013 (78 FR 75534). The site discussion begins with a list of commenters, followed by a site description, a summary of comments, and Agency responses to each comment. A concluding statement indicates the effect of the comments on the HRS score for the site.

Glossary

The following acronyms and abbreviations are used throughout the text:

%	Percent
Agency	U.S. Environmental Protection Agency
ASD/PDC	Albert Steel Drum/Prentiss Drug Company
ATSDR	Agency for Toxic Substances and Disease Registry
CCNJ	Chemistry Council of New Jersey
CIANJ	Commerce and Industry Association of New Jersey
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. Sections 9601 *et seq*., also known as Superfund
CFR	Code of Federal Regulations
D.C. Cir	United States Court of Appeals – District of Columbia Circuit
EPA	U.S. Environmental Protection Agency
FR	Federal Register
HRS	Hazard Ranking System, Appendix A of the NCP
HRS score	Overall site score calculated using the Hazard Ranking System; ranges from 0 to 100
ID	Identification
Inc.	Incorporated
LLC	Limited Liability Corporation
MCCC	Morris County Chamber of Commerce
mg/kg	Milligram per kilogram
NCP	National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300
NJ	New Jersey
NJBIA	New Jersey Business and Industry Association
NJDEP	New Jersey Department of Environmental Protection
NOV/OOS	Notice of Violation and Offer of Settlement
NPL	National Priorities List, Appendix B of the NCP
NS	Not scored
NY	New York
OSMIP	Office of Sludge Management and Industrial Pretreatment
OSWER	U.S. EPA Office of Solid Waste and Emergency Response
p.	Page
pp.	Pages
PPE	Probably Point of Entry
PRP	Potentially Responsible Party

PVSC	Passaic Valley Sewerage Commission
RI	Remedial Investigation
SARA	Superfund Amendments and Reauthorization Act
SCDM	Superfund Chemical Data Matrix
TAL	Target Analyte List
TCL	Target Compound List
TDL	Target Distance Limit
WWTP	Waste Water Treatment Plant

1. List of Commenters and Correspondence

EPA-HQ-SFUND-2013-0635-0004	Correspondence, dated August 9, 2011, from Bob Martin, Commissioner, New Jersey Department of Environmental Protection.
EPA-HQ-SFUND-2013-0635-0005	Comment, dated January 7, 2014, from Cynthia Taub, Steptoe & Johnson LLP on behalf of Troy Chemical Corporation, Inc.
EPA-HQ-SFUND-2013-0635-0006	Correspondence, undated, posted January 14, 2014, from Terry Jeng, OSWER/OSRTI/ARD/SARDB.
EPA-HQ-SFUND-2013-0635-0007	Correspondence, dated January 13, 2014, from Douglas Ammon, Chief, Site Assessment and Remedy Decisions Branch.
EPA-HQ-SFUND-2013-0635-0008	Correspondence, dated January 14, 2014, from Ildefonso Acosta, National Priorities List Coordinator – Region 2.
EPA-HQ-SFUND-2013-0635-0009	Comment, dated January 28, 2014, from Rodney P. Frelinghuysen, Eleventh District, New Jersey, United States House of Representatives.
EPA-HQ-SFUND-2013-0635-0010	Comment, dated January 29, 2014, from the International Brotherhood of Teamsters Local 560.
EPA-HQ-SFUND-2013-0635-0011	Comment, dated January 30, 2014, from Hal Bozarth, Chemistry Council of New Jersey.
EPA-HQ-SFUND-2013-0635-0012	Comment, dated February 19, 2014, from Blonnie R. Watson, President, Board of Chosen Freeholders, County of Essex
EPA-HQ-SFUND-2013-0635-0013	Comment, dated February 18, 2014, from Joe Pennacchio, Twenty-Sixth District, New Jersey State Senate.
EPA-HQ-SFUND-2013-0635-0014	Comment, dated March 12, 2014, from Ronald L. Rice, Twenty-Eighth District, New Jersey State Senate.
EPA-HQ-SFUND-2013-0635-0015	Comment, dated March 18, 2014, from Louis D. Greenwald, Majority Leader, New Jersey General Assembly.
EPA-HQ-SFUND-2013-0635-0016	Comment, dated February 10, 2014, from Paul A. Boudreau, President, Morris County Chamber of Commerce.
EPA-HQ-SFUND-2013-0635-0017	Comment, dated February 11, 2014, from John Galandak, President, Commerce and Industry Association of New Jersey.
EPA-HQ-SFUND-2013-0635-0018	Comment, dated March 24, 2014, from Melanie Willoughby, Acting President, New Jersey Business & Industry Association.
EPA-HQ-SFUND-2013-0635-0019	Comment, dated March 20, 2014, from Deborah Mans, NY/NJ Baykeeper, and Bill Sheehan, Hackensack Riverkeeper.

EPA-HQ-SFUND-2013-0635-0020	Comment, dated January 29, 2014, from Anthony R. Bucco, Twenty-Fifth District, New Jersey State Senate.
EPA-HQ-SFUND-2013-0635-0021	Comment, dated March 27, 2014, and attachment, from Cynthia Taub, Steptoe & Johnson LLP on behalf of Troy Chemical Corporation, Inc.
EPA-HQ-SFUND-2013-0635-0022	Comment, dated March 27, 2014, from Marcie R. Horowitz, Cole, Schotz, Meisel, Forman & Leonard, P.A., on behalf of 429 Delancy Associates LLC.
EPA-HQ-SFUND-2013-0635-0023	Comment, dated March 27, 2014, from Francis J. Giantomasi, Esq., Genova Burns Giantomasi Webster LLC, representing Troy Chemical Corporation.
EPA-HQ-SFUND-2013-0635-0024	Comment, dated March 27, 2014, from Rocco Ruggiero, Public Commenter.
EPA-HQ-SFUND-2013-0635-0025	Comment, dated March 24, 2014, from Melanie Willoughby, Acting President, New Jersey Business & Industry Association.

2. Site Description

The Pierson's Creek[1] site (the Site) as scored in the HRS documentation record at proposal consists of mercury-contaminated sediments in Pierson's Creek resulting from a historical release from a facility owned by Troy Chemical Corporation[2], located at One Avenue L, Newark, New Jersey. Pierson's Creek originates just south of the Troy Chemical facility and flows through channels and culverts to Newark Bay located approximately 1.5 miles downstream of the facility (See Figure 1 of this support document).

The HRS Site score is based on the threat posed by the release of mercury to environmental targets in Pierson's Creek and the potential threat from the release to the human food chain fishery in Newark Bay and environmental targets in and along the New York-New Jersey Harbor and nearby water bodies. In October 2012, the EPA conducted an investigation of Pierson's Creek documenting a release of mercury attributable to the former Troy facility. Elevated sediment mercury concentrations in the Creek start at the discharge point just south from the Troy Chemical facility and extend, for a distance of at least 0.25 mile downstream of the Troy Chemical facility.

The zone of mercury contamination includes approximately 0.15 mile of wetland frontage contiguous to Pierson's Creek immediately downstream of the Troy Chemical facility. The wetland frontage within the zone of actual contamination was delineated based on the presence of the wetland extending from the Conrail property north across the 429 Delancy property to Delancy Street (see Figure 2 of this support document). In addition, approximately 29 miles of wetland frontage downstream of the Site are evaluated as subject to potential contamination.

[1] At proposal, the site was named "Troy Chem Corp Inc" however, as discussed in section 3.6, Site Name, in this support document, the site name has been changed at promulgation to Pierson's Creek.

[2] Troy Chemical Company asserted that two different owners operated the Troy Chemical facility under the name "Troy Chemical Corporation" during the period discussed in this support document. Accordingly, for purposes of this HRS evaluation, when referring to any operation or action at the facility prior to June 1980 this support document refers to the facility as the "former Troy facility." When referring to any operation or action at the facility post June 1980, this support document refers to the facility as the "Troy facility" or "current Troy facility."

The release also threatens a human food chain fishery. Fishing for consumption has been reported at the 69th Street American Veterans Memorial Pier, along the eastern edge of the Upper New York Bay, located approximately 13 miles from the Site. The fishery is evaluated as subject to potential contamination. The Newark Bay, which is part of the New York-New Jersey Harbor Estuary sensitive environment identified under the National Estuary Program, is also considered potentially threatened by the release of mercury and is evaluated as subject to potential contamination.

Historically, Pierson's Creek originated north of the Site and flowed in a concrete channel through the Troy Chemical facility. Pierson's Creek was joined south of the Troy property by an intermittent tributary that flowed along the eastern portion of Troy Chemical property. In 2007, a rerouting of the City of Newark's stormwater management system resulted in the perennial portion of Pierson's Creek emanating just south of the Troy Chemical facility, where it receives stormwater from a box culvert as well as from the concrete channel previously containing the northern portion of Pierson's Creek and the east ditch on the Troy property. The point just south of the Troy Chemical facility where the perennial portion of Pierson's Creek now begins, is the probable point of entry (PPE) to surface water from the facility, as evaluated in the HRS documentation record at proposal. Due to the rerouting of Pierson's Creek in 2007, a shift in the location of the PPE to surface water may have occurred.

The former and current Troy facilities (see footnote 2 of this support document) manufactured mercury compounds from approximately 1956 until 1987. A mercuric oxide manufacturing process was reported to be the primary source of mercury-bearing wastewater at the former Troy facility, accounting for approximately 7,000 gallons of wastewater per week. Spills and leaks from manufacturing processes involving mercury and cleaning related to these processes were additional sources of mercury-bearing wastewater at the facility.

From 1956 until 1965, the former Troy facility discharged untreated mercury-bearing wastewater directly into Pierson's Creek. Beginning in 1965 and continuing until 1976, a sulfide precipitation pretreatment was used to treat mercury bearing wastewater generated from the former Troy facility prior to being discharged directly to Pierson's Creek. In 1976, the Troy Chemical facility began discharging wastewater to the Passaic Valley Sewerage Commission (PVSC) sewer system. The facility also began diverting wastewater from the mercury pretreatment system to a plant-wide wastewater treatment system, where wastewater was treated prior to discharge to the PVSC sewer system.

Other releases of mercury-bearing wastewater from the facility to Pierson's Creek have been documented following the facility's connection to the PVSC sewer system in 1976. An April 28, 1980, inspection completed by the New Jersey Department of Environmental Protection (NJDEP) identified both stormwater and wastewater entering Pierson's Creek and its tributary from runoff, pipes, cracks in the creek's concrete walls adjacent to a Troy building and tank farm, and overflow from Troy's industrial wastewater collection sump. Analyses completed on samples of these waters documented the presence of mercury within these waters.

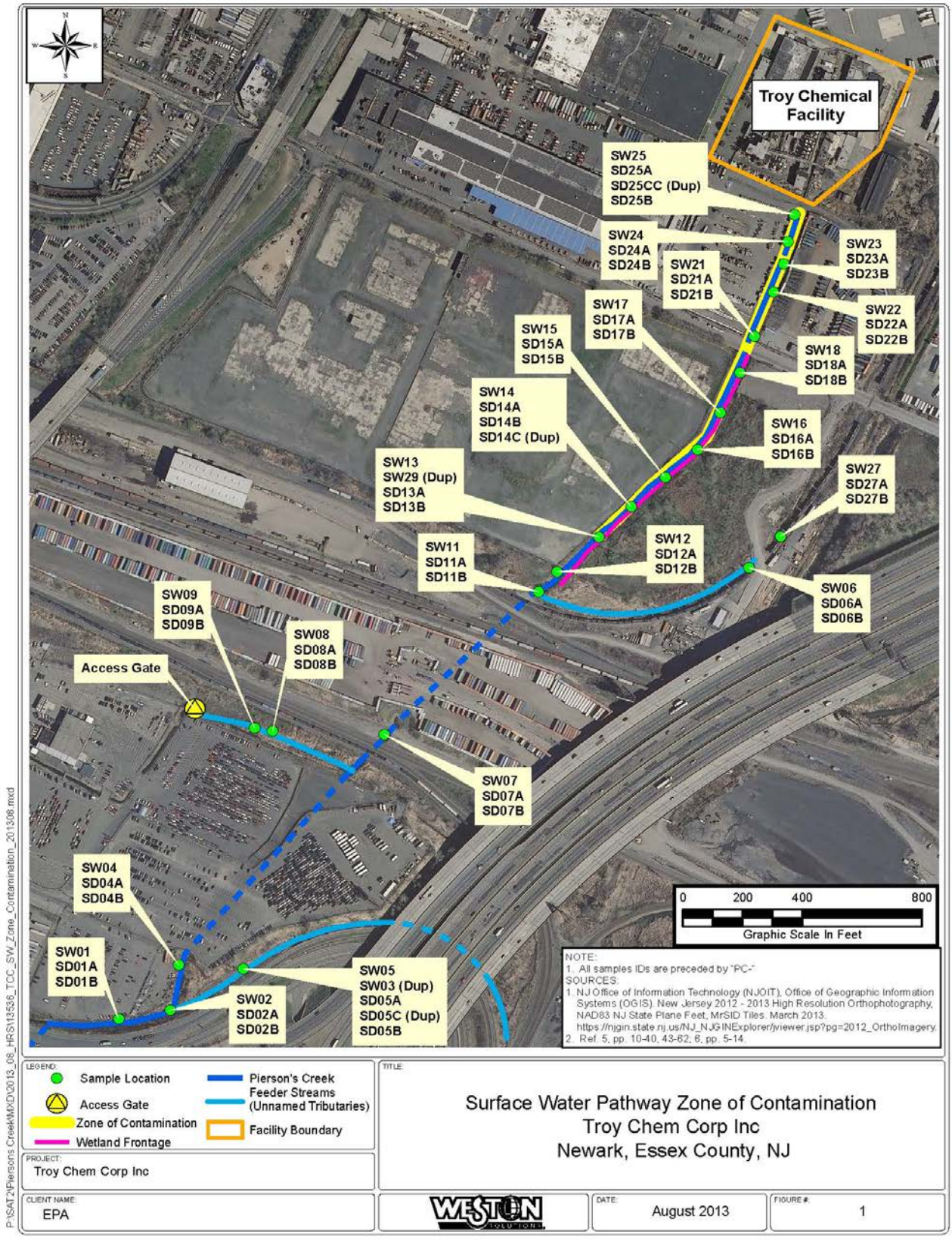

Figure 1 – Map of the surface water pathway in Pierson's Creek. Map includes the zone of contamination, wetland frontage, surface water and sediment sample locations and the location of the Troy Facility.

3. Summary of Comments

The NJDEP and one public commenter, the Hackensack Riverkeeper and NY/NJ Baykeeper, supported placing the Site on the NPL. The main reasons for support of the placement of the Site on the NPL were concerns that contamination associated with the Site may be posing human and ecological impacts, impacting water quality and resulting in elevated levels of contaminants in fish.

A total of 16 commenters opposed placing the Site on the NPL, identifying concerns regarding HRS scoring issues, perceived economic impacts, possible delays in the ongoing remediation at the Troy facility, and an alleged lack of a threat posed by the Site to human health or the environment. The current Troy Chemical Corporation, Inc. (Troy) opposed the placement of the Site on the NPL for several reasons, asserting the Pierson's Creek Site did "not meet the criteria for NPL listing." Troy further commented that the proposed listing is unwarranted due to the current remediation of the Site under a New Jersey state program. Troy asserted that the proposed remedial actions pursuant to the state program eliminate "the 'surface water migration pathway' upon which the proposed listing is based."

The Chemistry Council of New Jersey (CCNJ), Commerce and Industry Association of New Jersey (CIANJ), New Jersey Business and Industry Association (NJBIA), the Board of Chosen Freeholders, and New Jersey State Senators, Anthony R. Bucco, Ronald L. Rice and Joe Pennacchio all commented in opposition of the proposed NPL listing on the basis that Troy is already implementing environmental remediation at the Site and should be allowed to complete its remedial actions. Troy, New Jersey State Senator Anthony R. Bucco, and Morris County Chamber of Commerce (MCCC) asserted that there is no ongoing release.

Troy, CCNJ, and 429 Delancy expressed concern for perceived economic and stigmatizing effects of the proposed NPL Listing of the Site, asserting the proposed NPL designation will stigmatize the area, hurt redevelopment efforts, lower property values, cause businesses to rethink investing in nearby facilities and operations, and unnecessarily stigmatize neighboring facilities.

Troy and other commenters asserted that EPA guidance was not followed in naming the Site. Troy commented that the proposed Site name, Troy Chem Corp Inc, does not take into account the history of the drainage channel and fails to consider the geographical context of Pierson's Creek. New Jersey State Senators Anthony R. Bucco, Ronald L. Rice, and Joe Pennacchio commented that if the listing is to go final the Site name should be changed to Pierson's Creek.

Troy submitted several other comments, alleging issues with aspects of the HRS scoring of the Site. In particular, Troy challenged the hazardous waste quantity assigned and the delineation of the actually contaminated wetland. Regarding the hazardous waste quantity, Troy asserted:

- The quantity of hazardous wastewater discharged from the facility was overestimated.
- The wastestream discharge rate used to evaluate the hazardous wastestream quantity was from the period when the Former Site Owner discharged wastewater to the PVSC sewer system and not to Pierson's Creek.
- The 63 million pounds of wastewater discharged to Pierson's Creek during 1957-1976 as calculated by the EPA was inaccurate because the filtrate from the mercuric oxide unit, from which the discharge rate was derived, was only in operation during the late 1970s and early 1980s.
- The EPA did not follow current EPA guidance in evaluating the hazardous wastestream quantity and inappropriately extrapolated a single short-term wastestream discharge rate over many years.

Troy challenged the assignment of the food chain individual factor, commenting that mercury in Pierson's Creek was not a threat to fisheries in Newark Bay and New York Harbor. Troy asserted that the HRS evaluation did not

take into consideration the implausibility of sediment and mercury migration into the Newark Bay and New York Harbor from Pierson's Creek. Troy commented that mercury discharged to the Creek is contained in Creek sediments due to rapid settling of mercury into sediments, low flow rates in the Creek, tidal gates at the mouth of the Creek preventing tidal intrusions, and low water velocity within the Creek limiting sediment re-suspension. Troy also asserted that sediment and mercury transport modeling indicated that the Creek was not a significant source of mercury to Newark Bay or New York Harbor. Troy contended that due to the implausibility of sediment and mercury transport from Pierson's Creek to Newark Bay or the New York Harbor, a food chain individual factor is incorrectly scored.

Troy also questioned the adequacy of documentation included in the HRS package, commenting insufficient documentation of the wetland delineation was provided to allow for Troy to "meaningfully comment on the proposed listing." Troy and 429 Delancy both challenged the presence of wetlands contiguous to Pierson's Creek, commenting that the stretch of Pierson's Creek along the 429 Delancy property has been designated as "state open waters" by NJDEP, and that such designation means that stretch is not a wetland. Troy took further issue with the wetland delineation along Pierson's Creek, commenting:

- The wetland length contiguous to Pierson's Creek was overestimated.
- One of the wetland evaluation soil boring locations (SB-9) should not have been classified as wetland.
- SB-9 did not exhibit hydrophytic vegetation in excess of 50% of the total vegetation and, therefore, this location does not meet HRS wetland criteria.
- Inadequate information was provided in the HRS package to determine what the impact of the mischaracterization of SB-9 would be on wetland length measurements.

Troy concluded that the HRS Site score was incorrectly calculated and the appropriate Site score did not meet or exceed the standard for NPL listing of 28.50. Troy assigned a hazardous constituent quantity of 7,300 pounds, resulting in a hazardous waste quantity of 100 and a waste characteristics value of 320. Troy also asserted that there were no actually contaminated environmental targets or a fishery subject to contamination migrating from Pierson's Creek, resulting in an appropriate Surface Water Overland/Flood Migration Component and Surface Water Migration Pathway scores of 0.002, and resulting HRS Site score of 0.001.

3.1 Support for Listing

Comment: The State of New Jersey Department of Environmental Protection nominated and supported the placement of the Pierson's Creek site on the NPL, commenting that contamination associated with the Site had reached "levels of concern for both human and ecological impacts." The Hackensack Riverkeeper and NY/NJ Baykeeper submitted comments in support of placing the Site on the NPL in a timely manner. The Hackensack Riverkeeper and NY/NJ Baykeeper commented that the EPA should place the entire Site on the NPL and stated that subsequent remediation of the Site is necessary to restore ecological function, to address impacted water quality resulting from contaminated sediments, and to mitigate the consumption of fish with elevated levels of contaminants.

Response: The Pierson's Creek site is being added to the NPL. Listing makes a site eligible for remedial action funding under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the EPA will examine the Site to determine the appropriate response action(s). Actual funding may not necessarily be undertaken in the precise order of HRS scores, however, and upon more detailed investigation may not be necessary at all in some cases. The EPA will determine the need for using Superfund monies for remedial activities on a site-by-site basis, taking into account the NPL ranking, State priorities, further site investigation, other response alternatives, and other factors as appropriate.

3.2 Request for Extension of Comment Period

Comment: Several commenters requested an extension of the comment period for the Pierson's Creek site. On January 7, 2014, Troy requested a 90-day extension of the comment period that would have ended on February 10, 2014. Several commenters subsequently asked for additional extensions to the comment period. Specifically, the New Jersey General Assembly Majority Leader Louis Greenwald requested an additional 6-month extension of the public comment period to allow Troy's current remediation actions to continue and to allow for review of remediation progress made. Genova Burns Giantomasi Webster LLC and Rocco Ruggiero requested an additional 60-day extension of the comment period that would have ended on March 27, 2014, to allow submittal of information on remediation related to the Site.

Response: On January 13, 2014, the EPA granted a 45-day extension of the comment period until March 27, 2014, to allow interested parties additional time to submit comments. The extension was documented in a memorandum to the docket from Doug Ammon, Chief of the EPA Site Assessment and Remedy Decisions Branch, dated January 13, 2014 (docket ID EPA-HQ-SFUND-2013-0635-0007) and from Terry Jeng, Office of Solid Waste and Emergency Response, on January 14, 2014 (docket ID EPA-HQ-SFUND-2013-0635-0006). The extension was also documented in a letter to Ms. Nicole Sullivan from Ildefonso Acosta, EPA Region 2 – National Priorities List Coordinator, dated January 14, 2014 (docket ID EPA-HQ-SFUND-2013-0635-0008).

The EPA considered that the 45-day extension allowed ample opportunity for public comment. Requests to extend the comment period for an additional 60 days or 6 months to allow for delivery of ongoing remediation information were not granted. As discussed in section 3.9, Delay in Cleanup, of this support document, all site investigation work, as well as any remediation performed to date or currently proceeding will be considered in other steps of the Superfund remediation process, such as when performing a Superfund risk assessment for the Site. The request for an additional six-month extension of the comment period to allow remedial efforts to continue unabated has not been granted. As discussed in section 3.8, Delay Listing, of this support document, listing a site on the NPL is not delayed for negotiations to continue, and the listing does not prevent current or ongoing remedial actions from continuing or being completed.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.3 Adequacy of Documentation

Comment: Troy commented that the EPA provided inadequate documentation related to the wetland delineation and asserted that "[t]he failure to provide adequate information on where the borings were has deprived Troy of the opportunity to meaningfully comment on this aspect of the proposed listing." Troy specifically requested a map to show soil boring locations related to the delineation of wetlands scored as subject to Level II actual contamination, and photographs documenting vegetation and soil conditions at these boring locations. Troy noted that it is essential to the notice and comment process that the EPA "provide sufficient factual detail and rationale for the rule to permit interested parties to comment meaningfully."

Response: The HRS docket for the Pierson's Creek site at the time of proposal was appropriate and sufficient for the public to review and comment on the HRS evaluation of the Site and the proposed NPL listing. While the EPA is adding information to the listing docket at promulgation, as identified in later sections of this support document, the EPA has added this information to specifically address the issues raised in the comments. The information added to the listing docket at promulgation only provides further support for the values assigned in the HRS documentation record at proposal and does not result in any change to the HRS score or rationale or in the decision to place the site on the NPL. Specific comments regarding the adequacy of wetland documentation are addressed in Section 3.18.1, Wetland Frontage, and 3.18.2, Documentation of Wetland Delineation, of this support document (which explain that the documentation in the HRS package at proposal was sufficient to verify the wetlands frontage scored as subject to Level II actual contamination).

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.4 Definition of Site

Comment: Troy, CIANJ, CCNJ, NJBIA, the Brotherhood of Teamsters Local 560, and New Jersey State Senators Anthony R. Bucco, Ronald L. Rice, and Joe Pennacchio made comments equating the Troy property or the facility with the Pierson's Creek site. These commenters generally stated that the Troy "property" does not meet the criteria for Superfund listing and that the contaminants on Troy's property are contained and are currently being remediated. Genova Burns Giantomasi Webster, representing Troy Chemical Corporation, and Rocco Ruggiero commented that the Site consists of Pierson's Creek and the surrounding properties.

Troy made many comments implying that the Troy property was the Site. For example, Troy commented that:

- Because all of the sediments in the man-made concrete-lined channel on the Troy property have been contained, the potential migration of contamination from the facility to downstream areas has been eliminated.
- The Site consists of sediments in Pierson's Creek rather than at the Troy facility.
- The contamination on the Troy property is currently being remediated and the approved remedial plans remove the technical basis for listing the Site.

New Jersey State Senators Ronald L. Rice and Joe Pennacchio similarly commented that the Troy property is being remediated and mentioned that remediation within the boundaries of its current property should be considered before listing.

The Hackensack Riverkeeper and NY/NJ Baykeeper further commented that EPA should not separate upland and in-water portions of the Site and should place the entire Site on the NPL.

Response: Troy, CIANJ, CCNJ, NJBIA and the New Jersey State Senators, referenced above, incorrectly identify the "Site" to be the Troy property. HRS Section 1.1, Definitions, defines the term "site" as:

> area(s) where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located. Such areas may include multiple sources, and may include the area between the sources.

As also explained in the proposed rule to add the Troy Chem Corp Inc site to the NPL (78 FR 75534), a site is not defined by facility or property boundaries during an HRS evaluation. Specifically, page 75537 of NPL Proposed Rule No. 59, published December 12, 2013 clarifies that:

> [T]he NPL site is not necessarily coextensive with the boundaries of the installation or plant, and the boundaries of the installation or plant are not necessarily the ''boundaries'' of the site. Rather, the site consists of all contaminated areas within the area used to identify the site, as well as any other location where that contamination has come to be located or from where that contamination came.

This definition of site is consistent with CERCLA. CERCLA Section 105(a)(8)(A) requires the EPA to list national priorities among the known "releases or threatened releases" of hazardous substances; thus, the focus is on the release, not precisely delineated property boundaries. Further, CERCLA Section 101(b) defines a "facility" as the "site" where a hazardous substance has been "deposited, stored, placed, or otherwise come to be located." The "come to be located" language gives the EPA broad authority to clean up contamination when it has spread from the original source. On March 31, 1989 (54 FR 13298), the EPA stated:

> HRS scoring and the subsequent listing of a release merely represent the initial determination that a certain area may need to be addressed under CERCLA. Accordingly, the EPA contemplates that the preliminary description of facility boundaries at the time of scoring will need to be refined and improved as more information is developed as to where the contamination has come to be located; this refining step generally comes during the RI/FS stage.

Furthermore, the HRS documentation record at proposal does not state that the Troy facility itself is the site; rather, the HRS documentation record at proposal on page 15 states that the "site as scored consists of sediments in Pierson's Creek contaminated with mercury as a result of the historical releases from the chemical manufacturing facility located at One Avenue L." Therefore, the HRS "site" evaluated is not associated with property or facility boundaries and the Pierson's Creek site is not confined to the Troy property boundaries; similarly, the Site is not separated into upland or in-water portions and is evaluated consistently with the HRS definition of a site as quoted above in this section.

The Agency notes however, that the full extent of a "Site" for Superfund purposes is not determined at the time of listing. Placing a site on the NPL is based on an evaluation, in accordance with the HRS, of a release or threatened release of hazardous substances, pollutants, or contaminants. That the EPA initially identifies and lists the release based on a review of contamination at a certain parcel of property does not necessarily mean that the site boundaries are limited to that parcel.

Until the site investigation process has been completed and a remedial action (if any) selected, the EPA can neither estimate the extent of contamination at the site, nor describe the ultimate dimensions of the NPL site. Even during a remedial action, such as removing contaminated soils or sediments, the EPA may find that the contamination has spread further than previously estimated, or is not as extensive as estimated and the site definition may be correspondingly changed.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.5 Liability

Comment: Several commenters discussed issues dealing with possible liability issues for the Site contamination and remedial costs. Troy commented that there were many contributors to the contamination identified in Pierson's Creek and not just contamination that originated from the Troy property. Troy commented that any operations, discharges, or releases prior to June 1980 are not the responsibility of the current Troy Chemical facility and at no point during current Troy's ownership has the facility been a source of mercury contamination to Pierson's Creek. Troy commented that naming the Site after Troy Chemical implies Troy is responsible and will confuse the public as to who is responsible for the contamination in Pierson's Creek.

Similarly, 429 Delancy, the MCCC, CCNJ, and New Jersey State Senators Anthony R. Bucco, Joe Pennacchio and Ronald L. Rice commented that there were multiple upstream contributors to the current condition of the contamination in Pierson's Creek and it is unfair to single out Troy when numerous other facilities contributed to the contamination. MCCC and CCNJ further commented that the EPA is unfairly implying that the current Troy has a majority of the responsibility for the contamination in the Creek.

Response: In as much as these comments concern liability for the mercury contamination at the Pierson's Creek site, liability is not considered when evaluating a site under the HRS, nor is liability established or apportioned based on the decision to place a site on the NPL. The NPL serves primarily as an informational tool for use by the EPA in identifying those sites that appear to present a significant risk to public health or the environment. It does not reflect a judgment on the activities of the owner(s) or operator(s) of a site. It does not require those persons to undertake any action, nor does it assign any liability to any person. This position, stated in the legislative history of CERCLA, has been explained more fully in the Federal Register (48 FR 40759, September 8, 1983 and 53 FR

23988, June 24, 1988). See Kent County v. EPA, 963 F.2d 391 (D.C. Cir. 1992). Specific comments regarding to other scoring factors and other possible sources are addressed in other sections of this support document.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.6 Site Name

Comment: Troy, MCCC, Teamsters Local 560, CCNJ and CIANJ all commented that the Site name should be changed to Pierson's Creek. US Congressman Rodney Frelinghuysen requested that the EPA consider alternative names for the Site, including the suggested name, "Pierson's Creek." New Jersey State Senators Anthony R. Bucco, Ronald L. Rice, and Joe Pennacchio also commented that if the listing is to go final the Site name should be changed to Pierson's Creek.

Troy asserted that the proposed name, Troy Chem Corp Inc, failed to consider the history of the drainage channel and fails to consider the geographical context of Pierson's Creek. Troy claimed that the Troy facility is no longer a source of contaminants and at no point during its ownership has the present facility been a source of mercury contamination to Pierson's Creek; therefore, naming the Site after Troy implies that Troy is responsible and confuses the public.

Troy and CCNJ contended that the Creek has been impacted by numerous industrial facilities over the decades, and as a result the EPA should designate a geographical name for the Site rather than single out one entity. Troy commented that EPA's guidance states that if the principal operator cannot be definitely identified or if there are more than three potentially responsible parties, then it is appropriate to assign a geographical name.

Troy commented that the HRS documentation record indicates that the Site consists of sediments in Pierson's Creek, rather than at the Troy facility. Troy argued that the listing states that the primary purpose of the name is to provide geographical context, but naming the Site Troy Chem Corp Inc fails to do so. Because the Site was proposed based on contamination in downstream Creek sediments rather than the Troy facility, Troy asserted that the Site's name fails to identify the geographic location of the contamination and suggests naming the Site "Pierson's Creek."

Troy claimed that the proposed name does not inform the public of the primarily responsible parties, and misleads the public to believe that the current Troy facility is responsible for the contamination. Troy commented that the current Troy facility was not involved in historical discharges of mercury process waters into the Creek. Further, Troy commented that while EPA guidelines suggest naming a site after what "appears to be the primary source(s) of the problems at the site," naming the Site Troy Chem Corp Inc is unfair because the alleged primary source is no longer in existence, and another entity now carries the Troy name.

Troy commented that the Site is commonly known as Pierson's Creek and noted that the State of New Jersey refers to the Site as Pierson's Creek. Troy noted that EPA guidance[3] states "if the site is widely known by another name . . . the public interest may be best served by assigning that name . . ." Troy stated that the Site is better known as Pierson's Creek. Troy, MCCC, Teamsters Local 560, CCNJ, and CIANJ commented that the Site should be named Pierson's Creek to correctly inform the public of the Site's geographical location and to avoid unfairly implying that the current Troy Corporation is responsible for the contamination.

Response*:* The Site name has been changed to Pierson's Creek at promulgation. The HRS documentation record at promulgation has been revised to reflect this change. For the limited purpose of the NPL, as stated in RSR Corporation v. Environmental Protection Agency No. 95-1559 (D.C. Cir. 1997), when naming a site, the "EPA prefers names that accurately reflect the location or nature of the problems at a site and that are readily and easily

[3] Troy cites OSWER Directive 9345.1-08, *Regional Quality Control Guidance for NPL Candidate Sites*, Appendix F, December 26, 1991.

associated with the site by the general public" and "listing does not require any action of any private party, nor does it determine the liability of any party for the cost of cleanup at the site." Accordingly, a primary purpose of a NPL listing is to inform the public that the EPA has determined that a site warrants further investigation, and the new name in this rulemaking adequately satisfies that purpose.

It is important to note that the name of the Site is not considered as part of the HRS evaluation and changing the Site name does not impact the Site score or the decision to place the Site on the NPL. Further, the change in Site name does not impact the definition of the Site or change the source(s) associated with the Site as established in the HRS documentation record at proposal. As noted above in section 3.4, Definition of Site, of this support document, the Site consists of sediments contaminated with mercury as a result of the historical release of mercury from the former Troy facility. Nothing submitted by the commenters refutes or disproves that historic releases of mercury occurred at the Site and remain at the Site. The Site evaluation is not based on releases from other facilities; however, the full extent of contamination and site boundaries are not known at the time of NPL listing, nor has liability been assigned at this point.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.7 Purpose of Listing/Alternatives to Listing

Comment: Several commenters questioned the need for placing the Site on the NPL, pointing to existing levels of investigation completed, and currently implemented/planned remediation efforts. Troy stated that at this site, "further investigation is unwarranted, as the Troy site and surrounding area has been thoroughly investigated and the results well-documented." Troy further commented that placing the Site on the NPL is unnecessary because it would duplicate efforts that have already been undertaken at the Site that were approved by NJDEP and the EPA.

Troy commented that the contamination at the "Site" is currently being remediated under the State of New Jersey's Spill Compensation and Control Act and the New Jersey Site Remediation Reform Act to address contaminated sediments on Troy property as well as in portions of Pierson's Creek and placing the Site on the NPL is unwarranted and unnecessary. Troy asserted that EPA should reconsider the proposed listing to conserve EPA's resources for sites that truly warrant an NPL listing. Troy summarized the status of the ongoing remedial actions at the Site and claimed that the proposed remedial actions eliminate any potential migration from the facility to downstream areas and "eliminates the 'surface water migration pathway' upon which the proposed listing is based."

CCNJ, CIANJ, NJBIA, the Board of Chosen Freeholders, and New Jersey State Senators, Anthony R. Bucco, Ronald L. Rice, and Joe Pennacchio all commented that Troy is already implementing environmental remediation at the Site and should be allowed to complete its remedial actions and protect public health and the environment. State Senator Rice stated that "Troy should be provided a reasonable timeframe to implement its plan under the direction of the New Jersey Department of Environmental Protection" and EPA can re-evaluate the Site after remedial efforts are completed.

Further, the NJBIA commented that corporate citizens should not be discouraged from voluntary clean-up efforts. 429 Delancy urged the USEPA and the NJDEP to work together to craft a practical, streamlined approach to addressing the contamination in Pierson's Creek.

Response: Listing the Site on the NPL is an appropriate step in the Superfund process, and an HRS site score above 28.50 represents the EPA's determination that the Site poses a risk relative to other sites evaluated under the HRS and may warrant further action. The EPA has in place an orderly procedure for identifying sites where releases of substances addressed under CERCLA have occurred or may occur, placing such sites on the NPL, evaluating the nature and extent of the threats at such sites, responding to those threats, and deleting sites from the NPL. The purpose of the initial two steps (identifying sites where releases of substances addressed under CERCLA have occurred, or may occur and placing such sites on the NPL) is to develop the NPL, which identifies

for the States and the public those sites that appear to warrant remedial action. This site has been through these steps in the process and may warrant further action

Troy, as well as any other potentially response party (PRP) or member of the public, may affect the remedy selection through the public comment process, and listing a site on the NPL does not prevent a PRP or another entity from undertaking voluntary response actions. The EPA makes decisions during all stages of the procedure. However, PRPs may also undertake the RI/FS and/or remedial design/remedial action stages under EPA supervision and pursuant to appropriate agreements with governmental authorities (under enforcement authorities of CERCLA or those of other statutes). The listing process does not encumber or preclude PRPs from entering into these agreements. The EPA has entered into such agreements between proposal and promulgation at other sites, and such an alternative is available to Troy.

Regarding assertions that Troy's future planned remedial actions should be considered prior to listing the Site on the NPL, future remedial actions are not considered during the HRS evaluation of a site, as the HRS site score is based on current conditions. Part III Section Q of the Preamble to the HRS, Consideration of Removal Actions (Current Versus Initial Conditions, 55 FR 51568, December 14,1990), explains that the "EPA will evaluate a site based on current conditions provided that response actions actually have removed waste from the site…" As proposed future actions, such as those outlined by Troy, have not removed the contamination from the site, they are not considered in an HRS evaluation. Moreover, mercury contaminated sediments are still present at the Site, as documented by the results of sampling completed by EPA in October 2012 as part of the HRS evaluation, and as explained below in section 3.13, Danger to Human Health and the Environment, of this support document, an HRS site score above 28.50 represents EPA's determination that the Site may pose a relative risk to human health and the environment.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.8 Delay Listing

Comment: New Jersey State Senators Anthony R. Bucco and Joe Pennacchio, CIANJ, and the Board of Chosen Freeholders commented that the EPA should delay listing the Site to allow for state and federal officials to thoroughly review and analyze the ongoing remediation efforts. (CIANJ and the Board of Chosen Freeholders requested a minimum six-month delay in listing.)

Response: Placing a site on the NPL is not delayed to allow negotiations regarding response actions or ongoing response actions to be completed. Proceeding with the listing process need not inhibit efforts to determine response actions or carry out currently planned response actions. If any designated PRP wishes to expedite cleanup efforts, it may continue negotiations with the EPA and undertake removal actions under supervision of the EPA and pursuant to appropriate agreements with governmental authorities (under enforcement authorities of CERCLA or those of other statutes). Placing a site on the NPL does not encumber or preclude PRPs from entering into these agreements. The EPA has entered into such agreements before and after a site's promulgation to the NPL, and such an alternative is available to others. Furthermore, NJDEP has supported moving forward with placement on the NPL at the present time (see August 9, 2011 correspondence from NJDEP, docket ID EPA-HQ-SFUND-2013-0635-0004).

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.9 Delay in Cleanup

Comment: Several commenters expressed concern that listing the Site on the NPL would cause delay in currently planned remedial actions. Troy commented that listing the Site would serve no purpose other than to delay the ongoing remedial efforts and hinder redevelopment. Troy and CCNJ commented that adding the Site to the NPL

would add layers of federal approvals and indefinitely delay the remediation that is otherwise set to be completed within the next year. Troy stated that only by withdrawing the proposed listing can "current remediation of Pierson's Creek be completed on a timely basis." Additionally, New Jersey General Assembly Majority Leader Louis D. Greenwald commented that remedial efforts currently underway at the Site must be allowed to continue without delay. Majority Leader Greenwald added that Troy is poised to have its remedial actions completed by 2015, and that adding Superfund status to the Site could add 10 or more years to the cleanup effort.

NJBIA, 429 Delancy, CCNJ, and the Brotherhood of Teamsters Local 560 commented that placing the Troy site on the NPL would impose cumbersome, costly, and time-consuming administrative requirements that would require additional resources and would impede both the current cleanup process and future efforts of other downstream owners to redevelop their own properties.

Response: Commenters' concerns that listing would delay cleanup or plans for redevelopment of the property or other downstream properties, are unfounded. Placement of the Site on the NPL does not necessarily lead to delay of planned response actions or associated negotiations. All site investigation work, as well as any remediation undertaken by Troy performed to date and that which is currently proceeding will be considered in other steps of the Superfund remediation process, such as when performing a Superfund risk assessment for the Site. Then, based on the findings of the risk assessment, a determination of what further remedial actions, if any, are necessary will be made.

Furthermore, as explained in section 3.7, Purpose of Listing/Alternatives to Listing, of this support document, listing does not prevent PRPs from undertaking response actions if a PRP desires to expedite cleanup efforts. Further, regarding commenters' concerns that listing would result in a costly process delaying cleanup, the addition of a site to the NPL could accelerate privately financed, voluntary cleanup efforts (in addition to the potential for Federally financed remedial actions). Listing sites as national priority targets also may give States increased support for funding responses at particular sites.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.10 Socio-Economic Impact

Comment: Troy commented that besides being disparaging to Troy, the proposed NPL designation will stigmatize the area, cause economic and reputational harm to Troy, hurt redevelopment efforts in the Ironbound District, lower property values, and cause businesses to rethink investing in nearby facilities and operations.

Commenter 429 Delancy commented that EPA has previously downplayed the potential role of stigma at a typical NPL site, but that NPL listing may indeed have stigmatizing effects on downstream properties Similarly, CCNJ argued against NPL listing based on concerns that the Site and neighboring facilities will be unnecessarily impacted by the stigma of an NPL listing. Troy commented that because "Pierson's Creek is already being remediated, the NPL listing will serve no purpose other than to stigmatize the area."

Additionally, Troy, NJBIA, CCNJ, 429 Delancy, and New Jersey State Senator Ronald L. Rice commented that placement of the Site on the NPL would impede the cleanup process, hinder the redevelopment of the Ironbound District, discourage businesses from investing in nearby facilities and operations, and jeopardize future manufacturing opportunities in the area. New Jersey General Assembly Majority Leader Louis D. Greenwald, New Jersey State Senators Ronald L. Rice and Anthony R. Bucco, CIANJ, and the Board of Chosen Freeholders commented that listing the facility as a Superfund site would have an adverse effect on Troy's future business, hurt the economic well-being of the County, and would only serve to harm the employees and the city of Newark. New Jersey State Senators Anthony R. Bucco and CIANJ also commented that singling out Troy, which has spent resources addressing contamination, is unfair and will lead to adverse impacts to the future business of Troy as well as other companies.

Troy, New Jersey State Senator Ronald L. Rice, and CCNJ commented that placing the Site on the NPL would lower property values in the area. New Jersey State Senator Ronald L. Rice also commented that placing the site on the NPL would lead to greater property tax appeals due to reduced property values and ultimately a reduction in tax revenue.

Additionally, CCNJ commented that placing the Site on the NPL will increase the time frame and costs for completing remedial actions. Troy, CCNJ, NJBIA, CIANJ, the New Jersey General Assembly Majority Leader Louis D. Greenwald, and New Jersey State Senators Anthony R. Bucco and Ronald L. Rice all commented that Troy has already invested significant time and resources into developing a remediation plan to specifically address the mercury and other contamination in the concrete-lined ditch and portions of Pierson's Creek. New Jersey General Assembly Majority Leader Louis D. Greenwald commented that CERCLA is a cost-prohibitive process for a company that is already performing environmental remediation. Commenters 429 Delancy and Brotherhood of Teamsters Local 506 stated that listing the Site on the NPL would impose cumbersome, costly, and time-consuming administrative and other requirements that only serves to harm Troy financially.

Response: Economic factors such as those raised by the commenter are generally not considered in the assessment of whether a site belongs on the NPL based on an HRS evaluation. Inclusion of a site or facility on the NPL does not in itself reflect a judgment on the activities of the owner(s) or operator(s), but rather reflects the EPA's judgment that a significant release or threat of release has occurred and that the site is a priority for further investigation under CERCLA. The EPA notes that there are both costs and benefits that can be associated with listing a site. Any negative impacts noted by the above commenters would be engendered by the contamination in the area, not the result of placing the site on the NPL. Among the benefits are increased health and environmental protection as a result of increased public awareness of potential hazards. In addition to the potential for Federally financed remedial actions, the addition of a site to the NPL could accelerate privately financed, voluntary cleanup efforts. Listing sites as national priority targets also may give States increased support for funding responses at particular sites. As a result of the additional CERCLA remedies, there will be lower human exposure to high-risk chemicals, and higher quality surface water, ground water, soil, and air. Therefore, it is possible that any perceived or actual negative fluctuations in property values or development opportunities that may result from contamination may also be countered by positive fluctuations when a CERCLA investigation and any necessary cleanup are completed.

Regarding commenters' concerns that listing the Site on the NPL would increase costs associated with remediation, the discussion of costs in NPL rules in the Federal Register clearly states that including a site on the NPL does not cause the EPA necessarily to undertake remedial action; it does not require any action by a private party, nor does it assign liability for site response costs (56 FR 21462, May 9, 1991). The cost discussion outlines the EPA's perception of average potential costs per site that may occur in association with events generally following the proposed listing of a site. Any EPA actions that may impose costs on parties are based on discretionary decisions and are made on a case-by-case basis. Also, responsible parties may bear some or all the costs of the RI/FS and subsequent work, or the costs may be shared by the EPA and the States. Therefore, expenditures cited by the commenter are associated with events that generally follow listing the site, not with the listing itself. The EPA has not allocated costs for this site at this time.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.11 Potential Future State Requirement

Comment: New Jersey General Assembly Majority Leader Louis D. Greenwald commented that new legislation in New Jersey that has passed the Assembly Environment and Solid Waste Committee would require a public hearing prior to recommending a site for inclusion on the federal Superfund list.

Response: This comment has no effect on the decision to list the Site on the NPL. And, this possible State legislation imposes no additional requirements on the current NPL listing decision. If Majority Leader Greenwald

is implying that this site should not be listed until this law is in place, the EPA notes that this comment is not germane to the NPL listing decision at hand. Also, see section 3.8, Delay Listing, of this support document.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.12 Consistency with Guidance

Comment: Troy questioned whether EPA had followed relevant guidance in several aspects of the HRS evaluation. Specifically, Troy commented that EPA guidance was not followed in naming the Site "Troy Chem Corp Inc", estimating hazardous waste quantity, and delineating the wetland frontage, and asserted that HRS guidance should have been followed. Troy asserted that because relevant guidance was not followed, the Site should not be placed on the NPL.

Response: The EPA followed the HRS regulation to place the Site on the NPL. Furthermore, unlike the HRS regulation itself, the HRS Guidance Manual is not a regulation and imposes no mandatory requirements on the agency. Regardless, the Interim Final HRS Guidance Manual was also applied appropriately in the HRS evaluation based on the facts and circumstances known to be present for this site at proposal; any variation in applying the HRS Guidance Manual was carried out to reflect site-specific conditions. The HRS Guidance Manual states that:

> [t]he procedures set forth in this document are intended as guidance to employees of the U.S. Environmental Protection Agency (EPA), States, and other government agencies. EPA officials may decide to follow the guidance provided in this directive, or to act at variance with it, based on analysis of specific site circumstances.

In evaluating whether a site merits NPL listing, the EPA complies with the HRS and uses the HRS Guidance Manual as just that—guidance to determine how best to perform the HRS evaluation based on the facts or circumstances presented at each site. The HRS Guidance Manual is consistent with the HRS (this was not challenged by Troy) and the EPA has followed the HRS in scoring the Site and applied the HRS Guidance Manual, as appropriate, depending on the facts presented by this site.

The technical aspects of these comments, are addressed in this support document in sections 3.6, Site Name; 3.14, Hazardous Waste Quantity; and 3.18, Environmental Threat Targets: Wetlands.

These comments result in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.13 Danger to Human Health and the Environment

Comment: Troy commented that placing the Site on the NPL is unnecessary because of currently implemented and planned remediation actions related to the Troy property and portions of Pierson's Creek. Troy claimed that the remedial actions being undertaken at the Site will eliminate "any potential migration" of contaminants and therefore "eliminates the 'surface water migration pathway.'" Troy further commented that the EPA approved its work plan.

Troy asserted that there is no threat to the fishery because it is implausible mercury will migrate from Pierson's Creek through the Port Newark Channel to Newark Bay and New York Harbor and pose a future threat to any fishery. Troy commented that the EPA assumed sediment and mercury from Pierson's Creek will migrate into Newark Bay and New York Harbor, and that Troy considered the EPA assumption of the sediment fate and transport characteristics in the Creek, the Bay, and the Harbor "contrary to known facts about mercury migration."

New Jersey State Senator Anthony R. Bucco and MCCC commented that the Site does not pose a risk to public health and safety.

Response: Consistent with CERCLA and the NCP, the Site is being placed on the NPL based on an HRS evaluation of the relative risk posed by a release of mercury to Pierson's Creek and the threat that the release poses to downstream human food chain fisheries and wetland communities. Following listing, a site-specific risk assessment may be performed to determine the actual risk posed by the release from the former Troy operations to determine what remedial action, if any, is needed to protect human health and the environment. Troy's actions to date do not address the mercury already released to Pierson's Creek. Neither CERCLA nor the NCP require that the site contain a hazardous substance that is currently being released or that is currently migrating into the environment to be considered for inclusion on the NPL. Additionally, as scored at proposal, the Site consists of mercury released into Pierson's Creek from the operations at the former Troy facility; this mercury remains in streambed sediments and continues to pose a threat to the environment. This contamination is sufficient to place the site on the NPL as scored per the HRS.

Regarding the plan that EPA has approved for remedial actions being undertaken at the Troy facility, the plan states that contamination in Pierson's Creek south of the facility will not be addressed as part of the actions. Specifically, in Attachment 1 of this support document, the February 29, 2012, Self-Implementing PCB Cleanup and Disposal Plan, Troy states that "remediation of these ditches [referring to Pierson's Creek to the immediate south of the property and an unlined drainage ditch on the eastern edge of Troy's property] are not included in the scope of work outlined herein." Hence, Troy has not demonstrated that there is no unacceptable risk posed by the historical release of mercury that remains in Pierson's Creek regardless of the current containment of contaminants on the Troy facility.

The NPL is intended to guide the EPA in determining which sites warrant further investigation to assess the risk associated with the site; and, that the HRS evaluation and score above 28.50 represents EPA's determination that the Site poses a risk to human health and the environment relative to other sites evaluated under the HRS. See 78 FR 75534 (Proposed Rule, Troy Chem Corp Inc Site, December 12, 2013); see also 55 FR 51532 (Final Rule, Hazard Ranking System, December 14, 1990). CERCLA § 105(a)(8)(a) requires EPA to determine NPL priorities based on the "relative risk or danger to public health or welfare, or the environment." The criteria EPA applies to determine this relative risk or danger is codified in the HRS, and is the Agency's primary tool for deriving a site score based on the factors identified in CERCLA.

The issue at hand is the placement of the Pierson's Creek site on the NPL based on an HRS evaluation, and comments submitted on the proposal to place this Site on the NPL do not show any error in the HRS evaluation that changes the decision to promulgate the Site's Listing. As part of the standard Superfund process, once the Site is on the NPL, the investigations performed to characterize the Site will be evaluated for completeness, further information will be collected if deemed necessary to adequately characterize the risks posed by the Site, and based on this information, a risk assessment decision will be made determining if and what remedial action is necessary to protect human health and the environment.

Regarding Troy's comments that there is no threat to a fishery because sediments and mercury will not migrate from Pierson's Creek into the Port Newark Channel, Troy has not demonstrated that mercury cannot be transported down Pierson's Creek into the Port Newark Channel. Further, evidence of such transport is not required for an HRS evaluation to show a release of hazardous substances has occurred or to substantiate the fishery scored as subject to potential contamination. In fact, Troy identifies that such transport could occur. Troy comments that contaminated sediments that have become suspended in Pierson's Creek will reach the Port Newark Channel by stating that during high-flow events "sediments entering Port Newark Channel from Pierson's Creek will settle into the bed of Port Newark Channel." Therefore, according to Troy, mercury contaminated sediments are entering the Port Newark Channel from Pierson's Creek and thus could pose a threat to the documented fishery. (See also section 3.15, Likelihood of Release - Current Release, of this support document explaining that an observed release of mercury to the surface water pathway has occurred; and see

section 3.17, Human Food Chain Threat: Food Chain Individual, of this support document, explaining that the EPA correctly evaluated and documented the human food chain threat in the HRS documentation record at proposal.)

Regarding any ongoing remedial actions at the Troy facility, even if remediation were completed in accordance with the New Jersey technical requirements for site remediation, these remedial actions might or might not coincide with EPA's technical requirements for site remediation. Whether or not the areas still pose a risk and the effects of prior response actions will be determined at a subsequent stage in the Superfund process.

Finally, the State of New Jersey Department of Environmental Protection nominated and supported the placement of the Pierson's Creek site on the NPL, commenting that contamination associated with the Site had reached "levels of concern for both human and ecological impacts."

These comments result in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.14 Hazardous Waste Quantity

Comment: Troy questioned the assigned hazardous waste quantity value used in the HRS evaluation of the Site. The Source 1 hazardous waste quantity estimate (the only source included in scoring) was based on an estimate of the amount of mercury-bearing wastewater discharged from the facility. Troy commented that the estimate of the mass of hazardous waste discharged into Pierson's Creek was based on an "incomplete data point" and was overestimated. Troy commented that the hazardous waste quantity evaluation used data that was insufficient and of "questionable relevance" and should not have been used to estimate discharges to Pierson's Creek; Troy commented that using this data to extrapolate a hazardous waste quantity is contrary to HRS guidance. Additionally, Troy asserted that the quantity of mercury present in Pierson's Creek would be more accurately estimated by using the "extensive set of sediment data that has been developed over many years of testing." Troy commented that the present quantity of mercury in Pierson's Creek is lower than the estimate provided by the EPA in the HRS documentation record.

Response: Based on information the Agency had at the time of proposal, the hazardous waste quantity evaluation for Source 1, the historic discharge of mercury bearing wastewater from the Troy facility, was completed consistent with the HRS in the HRS documentation record at proposal; the source hazardous waste quantity value of 12,600 was appropriately assigned in the HRS documentation record at proposal using an estimate of the amount of historical mercury-bearing wastewater discharged to Pierson's Creek from the Troy facility. (However, as is further detailed in section 3.14.1, Tier B – Hazardous Wastestream Quantity, of this support document in response to comments provided by Troy, because of alleged uncertainty surrounding the documentation of mercury releases from the Troy facility, the Tier B hazardous wastestream quantity estimate has been revised at promulgation to undetermined but "greater than zero." This revision still results in a site score greater than 28.50 and no change in the decision to place the Site on the NPL.)

The HRS instructs how to determine the waste quantity for all eligible sources. A source is considered eligible for inclusion in a pathway evaluation if it has a containment value for that pathway of greater than zero. HRS Section 2.4.2, *Hazardous Waste Quantity*, provides the following instructions for evaluating hazardous waste quantity for an HRS pathway:

> Evaluate the hazardous waste quantity factor by first assigning each source (or area of observed contamination) a source hazardous waste quantity value as specified below. Sum these values to obtain the hazardous waste quantity factor value for the pathway being evaluated.

A hazardous waste quantity is determined after it has been established that a source is eligible for inclusion in a pathway evaluation. HRS Section 2.4.2.1, *Source hazardous waste quantity*, describes the process for evaluating source hazardous waste quantity. It states in relevant part:

> For each of the three migration pathways, assign a source hazardous waste quantity value to each source (including the unallocated source) having a containment factor value greater than 0 for the pathway being evaluated. Consider the unallocated source to have a containment factor value greater than 0 for each migration pathway.
>
> . . .
>
> For all pathways, evaluate source hazardous waste quantity using the following four measures in the following hierarchy:
>
> - Hazardous constituent quantity.
> - Hazardous wastestream quantity.
> - Volume.
> - Area.

HRS Section 2.4.2.1.1, *Hazardous constituent quantity,* directs how to evaluate Tier A, the hazardous constituent quantity of a source. It states in relevant part:

> Evaluate hazardous constituent quantity for the source (or area of observed contamination) based solely on the mass of CERCLA hazardous substances (as defined in CERCLA section 101(14), as amended) allocated to the source …
>
> Based on this mass, designated as C, assign a value for hazardous constituent quantity as follows:
>
> - For the migration pathways, assign the source a value for hazardous constituent quantity using the Tier A equation of table 2–5.
>
> . . .
>
> If the hazardous constituent quantity for the source (or area of observed contamination) is **adequately determined** (that is, the total mass of all CERCLA hazardous substances in the source and releases from the source [or in the area of observed contamination] is known or **is estimated with reasonable confidence**), do not evaluate the other three measures discussed below. Instead assign these other three measures a value of 0 for the source (or area of observed contamination) and proceed to section 2.4.2.1.5. [emphasis added]
>
> If the hazardous constituent quantity is not adequately determined, assign the source (or area of observed contamination) a value for hazardous constituent quantity based on the available data and proceed to section 2.4.2.1.2.

HRS Section 2.4.2.1.2, *Hazardous wastestream quantity,* describes how to evaluate Tier B, the hazardous wastestream quantity. It states:

> Evaluate hazardous wastestream quantity for the source (or area of observed contamination) based on the mass of hazardous wastestreams plus the mass of any additional CERCLA pollutants and contaminants (as defined in CERCLA section 101[33], as amended) that are allocated to the source . . .
>
> Based on this mass, designated as W, assign a value for hazardous wastestream quantity as follows:

> > • For the migration pathways, assign the source a value for hazardous wastestream quantity using the Tier B equation of table 2–5. . . .
>
> Do not evaluate the volume and area measures described below if the source is the unallocated source or if the following condition applies:
>
> > • The hazardous wastestream quantity for the source (or area of observed contamination) **is adequately determined**—that is, total mass of all hazardous wastestreams and CERCLA pollutants and contaminants for the source and releases from the source (or for the area of observed contamination) is known or **is estimated with reasonable confidence**. [emphasis added]
>
> If the source is the unallocated source or if this condition applies, assign the volume and area measures a value of 0 for the source (or area of observed contamination) and proceed to section 2.4.2.1.5. Otherwise, assign the source (or area of observed contamination) a value for hazardous wastestream quantity based on the available data and proceed to section 2.4.2.1.3.

HRS Sections 2.4.2.1.5 and 2.4.2.2 direct the scorer in calculating a source hazardous waste quantity value and a resulting hazardous waste quantity factor value for the pathway being evaluated. HRS Section 2.4.2.1.5 *Calculation of source hazardous waste quantity value,* states in relevant part:

> Select the highest of the values assigned to the source (or area of observed contamination) for the hazardous constituent quantity, hazardous wastestream quantity, volume, and area measures. Assign this value as the source hazardous waste quantity value. Do not round to the nearest integer.

HRS Section 2.4.2.2 *Calculation of hazardous waste quantity factor value,* states in relevant part:

> Sum the source hazardous waste quantity values assigned to all sources (including the unallocated source) or areas of observed contamination for the pathway being evaluated and round this sum to the nearest integer, except: if the sum is greater than 0, but less than 1, round it to 1. Based on this value, select a hazardous waste quantity factor value for the pathway from Table 2–6.

Table 2-6 assigns a hazardous waste quantity factor value. This factor value is proportional to the magnitude of the estimated sum of the source hazardous waste quantity values assigned to all sources. HRS Section 2.4.2.2 *Calculation of hazardous waste quantity factor value* further directs the scorer in assigning a hazardous waste quantity factor value. It states in relevant part:

> For a migration pathway, if the hazardous constituent quantity is adequately determined (see section 2.4.2.1.1) for all sources (or all portions of sources and releases remaining after a removal action), assign the value from Table 2–6 as the hazardous waste quantity factor value for the pathway. If the hazardous constituent quantity is not adequately determined for one or more sources (or one or more portions of sources or releases remaining after a removal action) assign a factor value as follows:
>
> > • If any target for that migration pathway is subject to Level I or Level II concentrations (see section 2.5), assign either the value from Table 2–6 [Hazardous Waste Quantity Factor Values] or a value of 100, whichever is greater, as the hazardous waste quantity factor value for that pathway.

The HRS documentation record at proposal first established that a containment value of greater than zero was present for Source 1, the source being evaluated at the Site, satisfying the requirement in HRS Section 2.4.2.1, *Source hazardous waste quantity* (quoted above). Page 22 of the HRS documentation at proposal record states:

> The Troy facility discharged untreated mercury wastewater directly to Pierson's Creek until 1965, and partially treated mercury wastewater directly to the creek from 1965 until 1976 [Ref. 18, pp. 4-5; 30, pp. 2-3]. The October 2012 EPA investigation confirmed that mercury has migrated from the source; analytical results for sediment samples downstream of the historical releases indicate the presence of mercury [see Section 4.1.2.1]. Based on the historical lack of containment and the current evidence of overland hazardous substance migration from the source, a surface water containment factor value of 10 is assigned for this source [Ref. 1, p. Table 4-2].

The HRS documentation record at proposal documented that the hazardous constituent quantity could not be adequately determined. It states on page 24 that:

> The hazardous constituent quantity for Source 1 could not be adequately determined according to the HRS requirements; that is, the total mass of all Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances in the source is not known and cannot be estimated with reasonable confidence [Ref. 1, Section 2.4.2.1.1]. There are insufficient historical and current data (Manifests, PRP records, State records, Permits, Waste concentration data, etc.) available to adequately calculate the total mass of all CERCLA hazardous substances in the source and the associated releases from the source. Therefore, there is insufficient information to evaluate the associated releases from the source to calculate the hazardous constituent quantity for Source 1 with reasonable confidence, and hazardous constituent quantity is not scored (NS).

Consistent with the HRS, a hazardous wastestream quantity was determined because the hazardous constituent quantity could not be adequately determined with reasonable confidence. Page 24 of the HRS documentation record at proposal documents the determination of the source hazardous wastestream quantity for Source 1, as follows:

> The Troy Chemical facility initiated manufacture of mercury-containing products in 1957, and the facility discharged its mercury-bearing wastewaters directly into Pierson's Creek until 1976 [Ref. 17, pp. 4, 6, 8, 22; 18, p. 5; 28, p. 2; 30, pp. 1-3]. The mercuric oxide manufacturing process was reported to be the primary source of mercury-bearing wastewater at the facility, accounting for approximately 7,000 gallons per week [Ref. 17, p. 22; 18, p. 4; 30, p. 2]. . . .
>
> Based on this information, 7,000 gallons per week during the period when Troy Chemical discharged its mercury-containing wastewater into Pierson's Creek (1957-1976) is considered a minimum estimate of hazardous wastestream quantity for Source 1. This estimate accounts for only one of several wastestreams, and it does not account for the documented discharges that occurred after 1976. Whether a whole year of discharge occurred in the first year (1957) or the last year (1976) is uncertain based on the available documentation, so only full years of operation (1958 through 1975 – 18 years) are evaluated. Using an average of 50 operating weeks per year, the volume of mercury-containing wastewater discharged to Pierson's Creek during that 18-year period would have been 6,300,000 gallons. HRS Table 2-5 uses a conversion rate of 2,000 pounds per 200 gallons, or 10 pounds per gallon [Ref. 1, Section 2.4.2.1]. Therefore, an estimated total mass of 63,000,000 pounds of mercury-containing wastewater were discharged into Pierson's Creek from 1958 through 1975. The hazardous wastestream quantity in pounds (W) is divided by 5,000 to obtain the assigned value, as shown below [Ref. 1, Table 2-5].
>
> Mass of source (lb): (7,000 gal/wk) x (50 wk/y) x (18 y) x (10 lb/g) = 63,000,000 lb

Hazardous Wastestream Quantity Value: 63,000,000/5,000 = 12,600

The sum of the source hazardous waste quantity values was determined from the source hazardous waste quantity value for the only source evaluated, Source 1, consistent with HRS Section 2.4.2.2. Page 35 of the HRS documentation record at proposal explains the assignment of the pathway hazardous waste quantity factor value. It states:

> The sum corresponds to a hazardous waste quantity factor value of 10,000 in HRS Table 2-6 [Ref. 1, Section 2.4.2.2]. Therefore, a hazardous waste quantity factor value of 10,000 is assigned for the surface water migration pathway.

Accordingly, based on documentation available at the time of proposal, the EPA evaluated the hazardous wastestream quantity consistent with the HRS. The EPA first evaluated the hazardous constituent quantity of mercury for Source 1 and determined that the total mass of mercury in the source cannot be estimated with reasonable confidence and is not adequately determined. The EPA then followed the HRS and proceeded to estimate the hazardous wastestream quantity. Based on the information available at proposal, the EPA determined that a mercury-bearing wastewater generation rate of 7,000 gallons per week extrapolated for 18 years of documented mercuric oxide manufacturing at the facility resulted in 63 million pounds of mercury-containing wastewater. Using Table 2-5 of the HRS, a hazardous wastestream quantity value of 12,600 was assigned for Source 1 in the HRS documentation record at proposal. Because the source hazardous wastestream quantity was sufficient, volume or area measure values were not determined.

Using a hazardous wastestream quantity value of 12,600, the EPA proceeded to HRS Table 2-6 and assigned a resulting hazardous waste quantity factor value of 10,000. Therefore, based on information available at the time of proposal, the EPA evaluated the source hazardous waste quantity of the historical wastewater discharge from the Troy facility and assigned a resulting hazardous waste quantity factor value of 10,000 in the HRS documentation record.

The following subsections of this support document address specific assertions regarding the hazardous waste quantity evaluation in the HRS documentation record at proposal:

- 3.14.1 Tier B - Hazardous Wastestream Quantity
- 3.14.2 Tier B - Data Extrapolation - Consistency with Guidance
- 3.14.3 Tier A - Hazardous Waste Quantity Based on Sediment Data

3.14.1 Tier B – Hazardous Wastestream Quantity

Comment: Troy commented on two aspects of the Source 1 hazardous wastestream quantity estimate in the HRS documentation record at proposal. Troy commented that the quantity of hazardous wastewater discharged from the facility was miscalculated and overestimated. Troy challenged the:

- Documentation of the quantification of mercury-bearing discharges to Pierson's Creek
- Relevance of data used to calculate hazardous wastestream quantity

Regarding mercury-bearing discharges, Troy commented that there is "no documentation of any mercury wastewater concentration in any of the Former Site Owner's discharges between 1957 and 1976." Troy asserted that the hazardous wastestream quantity calculation was inaccurate, because it was based on a single report by a NJDEP inspector that states that filtrate from a mercuric oxide unit produced "approximately 700 gallons of wastewater per batch with an average of 10 batches per week," and, because this data was then extrapolated over too long of a time period. Additionally, Troy commented that there is no documentation of discharges to Pierson's Creek during the period that was used to extrapolate the hazardous waste quantity.

Troy concluded that the use of a single value (7,000 gallons per week) from a unit that operated briefly to extrapolate for an 18-year period, as done in the HRS documentation record at proposal, resulted in an overestimation of the hazardous waste quantity and did not properly document the mercury-bearing wastewater discharges over the 18-year period from 1958 to 1975.

Regarding data relevance, Troy commented that the data used to determine the hazardous wastestream quantity were "irrelevant to the question of discharges to Pierson's Creek and should be disregarded." Troy asserted that the wastewater discharge rate of 7,000 gallons per week used to calculate the mass of contaminated wastewater discharged to Pierson's Creek from 1957-1976 is not relevant because it was obtained from a single NJDEP inspection performed in 1979. Troy made several comments about the relevance of the data used in the hazardous waste quantity calculation, including the following:

- Troy stated that this 1979 "information is not relevant to the time when the Former Site Owner discharged wastewater directly to Pierson's Creek (1957-1976)."
- Troy noted that during the time of the inspection, 1979, the Former Site Owner discharged wastewater to the Passaic Valley Sewage Commission (PVSC) sewer system and not to Pierson's Creek.

Troy commented that the estimate of 63 million pounds of wastewater discharged to Pierson's Creek during the period of evaluation (1958-1975) is inaccurate because the process that was the basis for the 7,000 gallons per week estimate—mercuric oxide processing and the related filtrate—was only in operation "for a relatively short period of time during the late 1970's and possibly the early 1980's" according to "knowledgeable former employees." And, Troy asserted during this short period of the process (1958-1975), discharges were to the sewer system.

Response: In responding to Troy's comments, the EPA has revised the HRS evaluation of the hazardous wastestream quantity value and the HRS documentation record at promulgation to reflect the revised source hazardous wastestream quantity value and resulting pathway hazardous waste quantity factor value. As explained below, this change in the source hazardous waste quantity value results in the hazardous waste quantity factor value being revised from 10,000 in the HRS documentation record at proposal to 100 at promulgation. This assigned value is consistent with HRS section 2.4.2.2, *Calculation of hazardous waste quantity factor value*, based on the presence of targets subject to Level II concentrations and a Tier B hazardous wastestream quantity estimate of undetermined but "greater than zero" (The responses below in this section show that at least some undetermined amount of mercury-bearing wastewater was discharged to Pierson's Creek). As will be set out below, the HRS documentation record shows that historic releases of mercury occurred at the Site and this revision to the hazardous waste quantity factor value still results in a HRS score above 28.5, and no change in the Agency's decision to place the Site on the NPL.

HRS Section 2.4.2.2, *Calculation of hazardous waste quantity factor value*, states in relevant part how to assign a hazardous waste quantity factor value when the hazardous constituent quantity cannot be adequately determined with reasonable confidence[4]:

> Sum the source hazardous waste quantity values assigned to all sources (including the unallocated source) or areas of observed contamination for the pathway being evaluated and round this sum to the nearest integer, except: if the sum is greater than 0, but less than 1, round it to 1. Based on this value, select a hazardous waste quantity factor value for the pathway from table 2–6.

[4] See section 3.14.3, Tier A – Hazardous Constituent Quantity Based on Sediment Data, of this support document for why the hazardous constituent quantity is not adequately determined at the Site.

Table 2–6—Hazardous Waste Quantity Factor Values

Hazardous waste quantity value	Assigned value
0	0
1[a] to 100	1[b]
Greater than 100 to 10,000	100
Greater than 10,000 to 1,000,000	10,000
Greater than 1,000,000	1,000,000

[a]If the hazardous waste quantity value is greater than 0, but less than 1, round it to 1 as specified in text.

[b]For the pathway, if hazardous constituent quantity is not adequately determined, assign a value as specified in the text; do not assign the value of 1.

For a migration pathway, if the hazardous constituent quantity is adequately determined (see section 2.4.2.1.1) for all sources (or all portions of sources and releases remaining after a removal action), assign the value from Table 2–6 as the hazardous waste quantity factor value for the pathway. **If the hazardous constituent quantity is not adequately determined for one or more sources** (or one or more portions of sources or releases remaining after a removal action) assign a factor value as follows:

> • If any target for that migration pathway is subject to Level I or Level II concentrations (see section 2.5), assign either the value from Table 2–6 or a value of 100, whichever is greater, as the hazardous waste quantity factor value for that pathway. [emphasis added]

Estimation of the Quantification of Mercury-Bearing Discharges to Pierson's Creek

Regarding comments on the documentation of discharges of mercury-bearing wastewater from the former Troy facility to Pierson's Creek, the HRS documentation record at proposal provides sufficient documentation of mercury-bearing wastewater discharges to Pierson's Creek. As further detailed in HRS documentation record citations below, the HRS documentation record at proposal documents that mercury-bearing wastewater was discharged to the Creek in several ways:

- The HRS documentation record at proposal contains information documenting the general discharge of mercury-bearing wastewater to Pierson's Creek.
- The HRS documentation record at proposal identifies that mercury-bearing wastewater was discharged directly to Pierson's Creek without treatment until 1965 when former Troy installed a mercury pretreatment system.
- The fact that the mercury pretreatment system was installed around 1965 without documentation that the manufacturing process had changed at the same time, supports that the facility had been discharging mercury to Pierson's Creek prior to 1965.
- Between 1965 and 1976, even though a mercury treatment system was in place for wastewater, some levels of mercury would have still been discharged to Pierson's Creek because the treatment process was not 100% effective.

- The mercuric oxide manufacturing process (and generation of the related mercury-bearding filtrate wastewater) was active prior to the 1976 switch from discharging to Pierson's Creek to discharging to the PVSC.

As presented in the HRS documentation record at proposal, the documentation of the discharge of mercury-bearing wastewater from the Troy facility to Pierson's Creek and the associated source hazardous wastestream quantity value determined in the HRS documentation record at proposal were estimated based on the information the Agency had at proposal. As quoted above in section 3.14, Hazardous Waste Quantity, of this support document, the HRS documentation record at proposal relies on quantities of wastewater generation from the mercuric oxide manufacturing process to evaluate the hazardous wastestream quantity. The HRS documentation record at proposal identifies and documents that Troy began manufacturing mercury containing products in 1956 and continued the process through 1976. Page 21 of the HRS documentation record at proposal states:

> The facility initiated manufacture of mercury-containing products in 1956 or 1957 [Ref. 17, pp. 4, 22; 19, p. 14; 20, p. 14; 28, p. 2; 30, p. 1].
>
> . . .
>
> The Troy Chemical facility discharged its mercury-bearing wastewaters directly to Pierson's Creek without treatment until 1965, when the facility's mercury pretreatment system was installed west of Building 56 at the edge of the creek [Ref. 17, p. 6; 18, p. 5; 20, pp. 14-16, 49, 63; 30, p. 3]. From 1965 to 1976, the mercury-bearing wastewaters were discharged to Pierson's Creek after a sulfide precipitation process in the pretreatment system [Ref. 17, pp. 6, 8; 18, p. 5; 19, pp. 13-14]. In 1976, the facility connected to the PVSC sewer system, and began diverting wastewater from the mercury pretreatment system to the facility WWTP, where wastewaters were treated by settling, removal of suspended solids and oil, and neutralization before subsequent discharge to the PVSC system [Ref. 17, p. 22; 19, pp. 14-15].

Reference 30 of the HRS documentation record at proposal, cited in the HRS documentation record quote above, supports that the Troy Chemical facility discharged its mercury-bearing wastewaters directly to Pierson's Creek. Page 3 of Reference 30 states:

> Mr. Nowak [Vice President of Research and Production for Troy Chemical Corporation] stated that since 1965 the mercury bearing waste water has been treated by sulfide precipitation. Up to 1976, the treated mercury waste water was discharged directly into Pierson's Creek rather than the septic tank-leach field system.

The HRS documentation record at proposal also explains that even following pretreatment, wastewater would still contain mercury; it states on page 21:

> Even these additional levels of treatment at the WWTP did not remove all mercury from the process wastewater – the mercury contribution to PVSC was calculated to be approximately 327 pounds per day tested in 1979, and the facility discharged an average of more than 30,000 gallons per day of mercury-bearing wastewater to the PVSC sewer system for a 91-day period in 1986 [Ref. 23, p. 1; 35, p. 1].

Reference 23 of the HRS documentation record at proposal, cited in the HRS documentation record quote above, states on page 1:

> Working with [Office of Sludge Management and Industrial Pretreatment] OSMIP, PVSC began taking split samples in January, 1979….

> Troy Chemical has contributed approximately 327 pounds per day to PVSC on those days tested in the Heavy Metals Study.

Further, the HRS documentation record at proposal provides detail regarding the mercuric oxide manufacturing process at the facility, implying that it was indeed in operation well before the "late 1970's and possibly the early 1980's," and operating within the timeframe used to generate the estimate of hazardous wastestream quantity. Page 21 of the HRS documentation record at proposal states:

> The mercuric oxide manufacturing process took place near Building 56 (constructed prior to 1954 on the east side of Pierson's Creek) until 1971, when the process was moved across the creek to Building 40 [Ref. 19, pp. 14, 135; 20, pp. 15, 49, 63].

Reference 19 of the HRS documentation record at proposal, cited in the HRS documentation record quoted above, states on page 14:

> Mercuric oxide manufacturing near Building 56 was discontinued around 1971. Around this time, Building 40 (on the other side of the ditch) was built. It was used for the manufacture of dryers and mercuric oxide.

Additionally, as discussed in section 3.15, Likelihood of Release – Current Release, of this support document, an observed release by direct observation to Pierson's Creek of mercury bearing wastewater was identified and documented in the HRS documentation record at proposal. The identification of the direct observation of a discharge of an undetermined mercury-bearing wastewater quantity to Pierson's Creek was not challenged by Troy in its comments.

Relevance of Data Used to Calculate the Hazardous Wastestream Quantity

Regarding Troy's comments on the relevance of the data used in the evaluation and specifically regarding the statement that the NJDEP investigation report was the only documentation upon which the wastewater discharge rate was based, the EPA did use data collected during an investigation by the NJDEP performed in 1979 to help support documentation that mercury-bearing wastewater was historically discharged to Pierson's Creek, but did not solely rely on this data for support.

As stated above, the EPA used many reports and historical evidence to document that a historical release of mercury-bearing waste was discharged from the former Troy facility, and that the mercuric oxide manufacturing process was active during the time frame evaluated in the hazardous wastestream quantity estimate. In addition, Troy did not present any evidence showing that the supporting information contained in the HRS documentation record at proposal was incorrect. Simply because the site inspection occurred after former Troy began discharging mercury-bearing wastewater to the PVSC does not negate that historical discharges of mercury-bearing wastewater occurred. Therefore, the HRS documentation record at proposal documentation sufficiently documents that mercury-bearing waste was discharged from the former Troy facility to Pierson's Creek and provides support for the rationale employed in calculating a hazardous wastestream quantity value.

Troy does not directly contend that no mercury-bearing waste was discharged from the operations at the former Troy facility but only that the quantity used in the hazardous wastestream quantity calculation was not appropriately documented. Troy contended that the hazardous wastestream quantity was miscalculated and over-estimated. As explained above, the HRS documentation record at proposal documented that the mercuric oxide process was an active process generating mercury bearing wastewater during the period when the Troy facility directly discharged mercury-bearing wastewater from the former Troy facility to Pierson's Creek.

However, in response to these comments regarding alleged uncertainty in the actual quantity of mercury-bearing wastewater discharged, the HRS documentation record at promulgation has been revised; the hazardous

wastestream quantity value has been changed to undetermined but greater than zero. Based on the evidence offered above, it is clear that at least some mercury-bearing wastewater was discharged to Pierson's Creek. Therefore, following the HRS Section 2.4.2.2, *Calculation of hazardous waste quantity factor value*, quoted above, the resulting pathway hazardous waste quantity factor value is 100 based on a source hazardous waste quantity of undetermined but greater than zero and the presence of Level II targets at the Site (see section 3.18, Environmental Threat Targets: Wetlands, of this support document).

The source hazardous wastestream quantity value and resulting pathway hazardous waste quantity factor value have been revised in the HRS documentation record at promulgation. However, the site score remains above 28.50 as explained in section 3.19, HRS Score, of this support document, which contains an explanation of scoring changes. This comment results in no change in the decision to place the Site on the NPL.

3.14.2 Tier B - Data Extrapolation - Consistency with Guidance

Comment: Troy commented that the hazardous waste quantity calculated in the HRS documentation record was not calculated consistent with current EPA guidance.[5] Troy asserted that the hazardous waste quantity evaluation used data that was insufficient and of "questionable relevance" and should not have been used to estimate discharges to Pierson's Creek; Troy commented that using this data to extrapolate a hazardous waste quantity is contrary to HRS guidance. Troy specifically commented that the extrapolation of a single short-term waste stream discharge rate over many years was not consistent with EPA guidance. Troy commented that HRS Guidance states "[e]xtrapolating short-term waste stream data over much longer periods (e.g., six months of data extrapolated over 20 years of operation) is generally not acceptable." Troy asserted that extrapolating a single wastewater discharge rate over an 18 year period is not consistent with HRS guidance and "fails to meet this HRS-defined standard."

Response: As discussed in section 3.14.1 above, after considering Troy's comments, the EPA has decided to revise the hazardous wastestream quantity to undetermined but greater than zero, removing extrapolation of wastestream data from 1979 to an earlier time frame. However, as stated in section 3.12, Consistency with Guidance, of this support document, HRS guidance is not a regulation and imposes no mandatory requirements on the agency. HRS guidance is intended only to provide a scorer with guidance regarding the implementation of the HRS and as explained above in sections 3.14, Hazardous Waste Quantity, and 3.14.1, Tier B – Hazardous Wastestream Quantity, of this support document, based on the information available at proposal, the hazardous waste quantity was estimated consistent with the HRS.

Regarding Troy's assertion that the HRS evaluation at proposal inappropriately extrapolated the data pertaining to the hazardous wastestream quantity evaluation, the EPA considered site-specific information and determined that at proposal the best documentation available indicated that the data extrapolation was a conservative estimate (likely less than the actual amount of mercury-bearing wastewater discharged from the facility) and was appropriate and consistent with the HRS. Additionally, Troy did not present any documentation showing that either mercury-bearing wastewater was not being produced at the facility during the extrapolated time frame, or that the wastewater was not being discharged to Pierson's Creek. As discussed in sections 3.14, Hazardous Waste Quantity, and 3.14.1, Tier B – Hazardous Wastestream Quantity, of this support document, it was determined that the information used to evaluate hazardous wastestream quantity was representative of discharged wastewater from former Troy and the estimation of the hazardous wastestream quantity for the 18-year period was reasonable.

Nevertheless, although the EPA appropriately determined the hazardous wastestream quantity at proposal, the Agency (in response to Troy's comments) has revised the hazardous wastestream quantity to undetermined but greater than zero (in effect, removing extrapolation of data from the scoring of this value). Therefore, the HRS documentation record at promulgation remains consistent with the HRS and all contended guidance documents.

[5] Troy cites the draft HRS Guidance Manual, Interim Final, November 1992.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.14.3 Tier A – Hazardous Constituent Quantity Based on Sediment Data

Comment: Troy commented that the hazardous waste quantity calculation would be more appropriately evaluated using a calculation of the current mercury mass in sediments in Pierson's Creek (Tier A, hazardous constituent quantity) rather than evaluating the amount of mercury in discharges (Tier B, hazardous wastestream quantity), as completed in the HRS evaluation. Troy asserted that the quantity of mercury within Pierson's Creek sediments based on sediment data collected from 2008 to 2012 would provide a more appropriate estimate of the mass of mercury discharged and the hazardous waste quantity and would provide more certainty to the estimation of the amount of remediation required. Troy further commented that the HRS evaluation only quantified mercury-bearing wastewater discharged by former Troy and did not consider contributions to Pierson's Creek from all industrial sources in the area.

Troy commented that "the mass of mercury present in Pierson's Creek is significantly less than that estimated by the EPA." Troy commented that the hazardous waste quantity factor value of 10,000 for the surface water pathway used in the HRS scoring overestimated the mass of mercury present in sediments in Pierson's Creek and overestimated the mass of mercury discharged by the former "Site" owner (referring to the pre-June 1980 owner of the facility, Troy Chemical Corporation). Specifically, Troy commented that an estimated value of 7,300 pounds of mercury is currently retained in Pierson's Creek sediments, as determined by Troy from sediment data collected from 2008-2012. Troy asserted that this value should be used to determine the hazardous constituent quantity (Tier A) at the Site instead of the hazardous wastestream quantity of 63 million pounds. Troy commented that its estimate would result in a hazardous waste quantity factor value of 100 and a hazardous waste characteristics factor category value of 320.

Response: Troy's assertion that a more appropriate source hazardous waste quantity evaluation would use a hazardous constituent quantity of 7,300 pounds is incorrect. The value provided by Troy in its comments was developed by determining the mass of mercury present in sediments in only a portion of Pierson's Creek. Further, the hazardous constituent quantity value provided by Troy did not adequately determine the mass of hazardous substances in Source 1, as the mass includes contributions from all potential contributors in the area instead of solely the release from Site Source 1.

As discussed in section 3.14, Hazardous Waste Quantity, of this support document, the HRS documentation record at proposal did not provide a hazardous constituent quantity for Source 1, consistent with the HRS, because there was insufficient data to adequately determine the mass of all CERCLA hazardous substances in the source and releases from the source with reasonable confidence. Following the HRS, outlined in section 3.14, Hazardous Waste Quantity, of this support document, the estimation of a source hazardous waste quantity scoring proceeded to the next tier in the hierarchy.

Even if the hazardous constituent quantity provided by Troy was derived entirely from Source 1, the evaluation would still proceed to Tier B (hazardous wastestream quantity) because this Tier A estimate only includes a portion of Pierson's Creek and does not provide a reasonable estimate of the total mass of all CERCLA hazardous substances. The hazardous constituent quantity evaluation provided by Troy in its comments is only a partial hazardous constituent quantity calculation that estimates the quantity of mercury retained in Pierson's Creek sediments from the PPE to a location approximately 2/3 mile downstream of the PPE (see Exhibits of the Troy Chemical comments, docket ID EPA-HQ-SFUND-2013-0635-0021). Pierson's Creek flows for an additional approximate 2/3 mile past the point where Troy's hazardous constituent quantity evaluation ceased evaluating Pierson's Creek sediments, and eventually discharges into Newark Bay; and contaminated sediments are still likely present in this second 2/3-mile stretch (see Exhibits of the Troy Chemical comments, docket ID EPA-HQ-SFUND-2013-0635-0021). Therefore, the estimate completed by Troy includes only an assessment of the mercury retained in sediment in a portion of the length of Pierson's Creek. Following the HRS, as detailed in

section 3.14, Hazardous Waste Quantity, of this support document, the evaluation would still proceed to Tier B, hazardous wastestream quantity, consistent with the evaluation in the HRS documentation record at proposal.

As indicated in section 3.14.1, Tier B – Hazardous Wastestream Quantity, of this support document, the Tier B hazardous wastestream quantity value has been lowered from 12,600 to "undetermined but greater than zero" (yielding a source hazardous waste quantity value of greater than zero) and the resulting hazardous waste quantity factor value has been lowered from 10,000 to 100 in the HRS documentation record at promulgation.

Therefore, even if the EPA used Troy's estimate of 7,300 pounds of mercury as a partial estimate of the hazardous constituent quantity, this value would only add to the source hazardous waste quantity value evaluated for the Site at promulgation, resulting in a source hazardous waste quantity of 100 from Table 2-6, and would have no effect on the pathway hazardous waste quantity value or the Site score.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.15 Likelihood of Release - Current Release

Comment: Troy, New Jersey State Senator Anthony R. Bucco, and MCCC submitted comments related to a contention that the release to Pierson's Creek from the Troy facility is not ongoing. Troy asserted that placing the Site on the NPL is unnecessary because all of the sediments in the man-made concrete-lined channel on the Troy property are contained, are currently being remediated, and are no longer a threat to the environment. New Jersey State Senator Anthony R. Bucco and MCCC commented that there is no ongoing release of contamination at the Site. Further, Troy commented that because contaminants are contained, the remedial actions being undertaken at the Site will eliminate "any potential migration" of contaminants and therefore eliminate the surface water migration pathway.

Troy asserted that the mercury that has been discharged into Pierson's Creek "mostly remains in the sediment" and that fate and transport characteristics in the Creek will not allow for contaminant migration.

Response: Inasmuch as these comments call into question the observed release to Pierson's Creek established at the Site in the HRS documentation record at proposal, the likelihood of release value of 550 is correctly assigned and documented based on an observed release of mercury to Pierson's Creek from the operations at former Troy. The release need not be currently occurring for this value assignment. The HRS documentation record at proposal lists the mercury release as a historical discharge of mercury-bearing wastewater from the Troy facility and an observed release of mercury contamination by both direct observation and chemical analysis to Pierson's' Creek. Specifically, in establishing an observed release to the surface water migration pathway, the HRS does not require that a release of hazardous substance is ongoing, it only requires that a "site has released a hazardous substance". Insomuch as these comments imply that there is no current risk from the scored historical release of mercury, see section 3.13, Danger to Human Health and the Environment, of this support document for an explanation of the current risk.

HRS Section 4.1.2.1.1, *Observed release,* contains the directions used to establish an observed release to surface water:

> Establish an observed release to surface water for a watershed by demonstrating that the site **has released** [emphasis added] a hazardous substance to the surface water in the watershed. Base this demonstration on either:

• Direct observation:

–A material that contains one or more hazardous substances has been seen entering surface water through migration or is known to have entered surface water through direct deposition, or

. . .

• Chemical analysis:

–Analysis of surface water, benthic, or sediment samples indicates that the concentration of hazardous substance(s) has increased significantly above the background concentration for the site for that type of sample (see section 2.3).

- -Limit comparisons to similar types of samples and background concentrations – for example, compare surface water samples to surface water background concentrations.

- -For benthic samples, limit comparisons to essentially sessile organisms.

–Some portion of the significant increase must be attributable to the site to establish the observed release, except: when the site itself consists of contaminated sediments with no identified source, no separate attribution is required.

If an observed release can be established for a watershed, assign an observed release factor value of 550 to that watershed, enter this value in table 4–1, and proceed to section 4.1.2.1.3. If no observed release can be established for the watershed, assign an observed release factor value of 0 to that watershed, enter this value in table 4–1, and proceed to section 4.1.2.1.2.

The HRS documentation record at proposal documents an observed release by direct observation. It states on page 28:

Observed release by direct observation is supported by numerous reports of mercury-containing wastewater and stormwater discharging from the Troy facility directly into Pierson's Creek and its unnamed tributary [Ref. 18, pp. 5, 12-21]. On March 25, 1977, NJDEP issued Troy Chemical a Notice of Violation and Offer of Settlement (NOV/OOS) indicating that waste chemicals were allowed to enter a tributary to Newark Bay; Troy settled the NOV/OOS as stipulated [Ref. 17, p. 11]. During an inspection on April 28, 1980, NJDEP observed stormwater and wastewater flowing into Pierson's Creek and the unnamed tributary via runoff, pipes, cracks in the creek's concrete walls adjacent to a Troy building and tank farm, and overflow from Troy's industrial wastewater collection sump [Ref. 32, pp. 1-2]. NJDEP collected and analyzed samples C27080 (Stormwater runoff sample, flowing into a tributary of Pierson's Creek directly east of tank farm A), C27091 (Liquid sample, containing mercury droplets, collected at the same location as sample No. C27080), C27081 (Stormwater pipe flowing into Pierson's Creek), C27082 (Groundwater/stormwater sample flowing into Pierson's Creek through a crack in the Creek wall adjacent to Troy's Blue building), C27083 (Overflow from Troy's industrial wastewater collection sump; discharge was on the east side of Pierson's Creek approximately 50 feet downstream from the [old] locker room discharge), C27084 (Groundwater/stormwater sample flowing into Pierson's Creek through a crack in the creek wall adjacent to Troy's tank farm E), and C27085 (Stormwater flowing into Pierson's Creek on the south side of Troy's maintenance building) [Ref.

> 32, pp. 1-9]. The laboratory analyses indicated the presence of mercury in all of these wastestreams observed flowing into Pierson's Creek and its tributary; copper, lead, arsenic, and zinc were also detected in multiple samples [Ref. 32, pp. 3-9].

Additionally, the HRS documentation record at proposal documents an observed release of mercury by chemical analysis. Page 28 of the HRS documentation record at proposal summarizes results of the sampling effort in Pierson's Creek and pages 30-33 contain the background and observed release sample data showing a threefold increase in mercury concentrations in the observed release samples. (See section 3.16, Likelihood of Release – Attribution, of this support document for why the observed release evaluated in the HRS documentation record at proposal is attributable to the Site.) Specifically, the HRS documentation record at proposal on page 28 states:

> In October 2012, EPA collected surface water and sediment samples for TAL metals and TCL organics analysis from the open-water segments of Pierson's Creek along the in-water segment of the surface water migration pathway downstream of the Troy facility site source, and at background locations along unnamed tributaries (i.e., feeder streams) [Figure 3; Ref. 5, pp. 9-18; 6, pp. 3-14]. The sampling and analysis by EPA showed the presence of mercury at concentrations significantly above background concentrations in sediment samples collected along the downstream in-water segment of the surface water pathway [Figures 3, 4; see Tables below]. The observed release by chemical analysis is documented along the surface water migration pathway downstream of the site source, between the sample PC-SD25B at the PPE and sample PC-SD13B, approximately 0.25 mile downstream [Figure 3].

As quoted above, the HRS documentation record at proposal describes that a release of mercury-contaminated wastewater has been documented via direct observation and chemical analysis at the former Troy facility. The release is documented by a direct observation of mercury-bearing wastewater directly entering Pierson's Creek and by chemical analysis of sediment samples showing a site-attributable significant increase in mercury contamination in Pierson's Creek immediately downstream of the PPE from the Troy facility. Specifically, the observed release by chemical analysis is documented by mercury contamination in Pierson's Creek immediately below the PPE (sample PC-SD25B: 1,770 mg/kg mercury) containing more than 10 times the mercury concentration than that of the highest background sample (sample PC-SD09A: 121.51 mg/kg mercury).

Regarding Troy's assertions that sediments on the Troy property are contained and remedial actions will eliminate any potential migration, Troy is referring to further migration of contamination, and therefore is acknowledging the sediment contamination is the result of a release. Additionally, Troy has provided no documentation to support its claim that sediments are contained; nor is there any requirement that the release be documented to migrate further to identify that a release has occurred. (And regardless of any containment/remedial actions *on the Troy property*, the release of mercury *to the creek sediments* has occurred and that contamination remains present in the creek and unaddressed.)

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.16 Likelihood of Release - Attribution

Comment: Several comments were received related to the attribution of the significant increase in mercury contamination in sediments to the Site that were used to identify the observed release by chemical analysis. Troy, MCCC, CCNJ, and New Jersey State Senators Joe Pennachio and Ronald L. Rice commented that the contamination in Pierson's Creek was the result of many contributors. Commenter 429 Delancy asserted that downstream properties were not contributors to the contamination identified in the HRS evaluation. Troy specified that the former Engelhard facility and dredging of the creek were other sources of contamination to Pierson's Creek. The MCCC asserted that "many entities contributed to the current conditions of the Creek," and Troy was not primarily responsible for the contamination in Pierson's Creek. CIANJ stated that Pierson's Creek

"is part of a heavily industrialized area" and "has been impacted by the operations of numerous industrial companies for almost a century," and asserted that singling out Troy is unfair.

Troy and NJ State Senator Rice commented that (current) Troy was not a contributor to creek contamination where Troy further asserted that, during (current) Troy's ownership of the facility, Troy was not a contributor of mercury to Pierson's Creek. Troy also commented that the EPA only identified historical discharge as a source. Troy also commented that the Site name of Troy Chem Corp Inc misinforms the public of the primarily responsible parties for the contamination in Pierson's Creek.

Troy further commented that contamination found in Pierson's Creek contains PCBs and volatiles that are not attributable to the operations at the Troy facility while under previous ownership. Specifically, Troy commented that under a false bottom in a portion of Pierson's Creek, an additional layer of sediment contaminated with contaminants other than mercury was identified; Troy asserted that this contamination came from other facilities in the area.

Response: The attribution of the significant increase in sediment mercury concentrations in the zone of contamination is properly attributed, at least in part, to the Site, consistent with the HRS. The former Troy facility is documented to have used mercury in its manufacturing processes and is documented to have discharged mercury-containing wastewater directly into Pierson's Creek. Further, the HRS documentation record at proposal presents an analysis of sediment samples taken from Pierson's Creek (both background samples and samples taken just downgradient of the probable point of entry (PPE)) that show a significant increase in mercury contamination directly downgradient from the PPE leaving the Troy facility and identify the zone of contamination. The zone of contamination, as identified in the HRS documentation record at proposal, extends from the PPE to the most downstream sample that meets observed release criteria (PC-SD13B). (See Figure 1 of this support document.)

Further, in conducting this HRS evaluation, the EPA did not locate any sources of mercury other than Troy in the area that could be meaningfully contributing to the significant increase of mercury in the zone of contamination, and the EPA documented a direct discharge of mercury from the former Troy facility to the Creek. Nor did Troy or any other commenter identify any other off-site sources to the zone of contamination. Thus, the HRS documentation record documented that the mercury in the zone of contamination is attributable, at least in part, to the historical discharge of mercury-containing wastewater from the former Troy facility.

The HRS does not contain specific instruction regarding the methodology for establishing attribution for an observed release by chemical analysis. On the subject of attribution for all HRS pathways, however, HRS Section 2.3, *Likelihood of release*, states in relevant part:

> Establish an observed release either by direct observation of the release of a hazardous substance into the media being evaluated (for example, surface water) or by chemical analysis of samples appropriate to the pathway being evaluated (see sections 3, 4, and 6). The minimum standard to establish an observed release by chemical analysis is analytical evidence of a hazardous substance in the media significantly above the background level. Further, **some portion of the release must be attributable to the site**. Use the criteria in table 2–3 as the standard for determining analytical significance. [emphasis added]

For the surface water migration pathway, HRS Section 4.1.2.1.1, *Observed release*, contains the directions used to establish attribution for establishing an observed release by chemical analysis:

> –**Some portion of the significant increase must be attributable to the site to establish the observed release**, except: when the site itself consists of contaminated sediments with no identified source, no separate attribution is required. [emphasis added]

The significant increase in mercury concentrations was shown to be attributable to the Site in two steps. First, it was documented that the former Troy facility used and discharged mercury. Second, it was established that no other facility could be found that historically discharged or currently discharges mercury upstream of the zone of contamination or directly into the zone of contamination.

As identified in section 3.15, Likelihood of Release - Current Release, of this support document, an observed release by direct observation has been properly established at the Site, demonstrating that the former Troy facility has released a hazardous substance to the surface water. The HRS documentation record at proposal documents an observed release by direct observation; on page 28 it states:

> Observed release by direct observation is supported by numerous reports of mercury-containing wastewater and stormwater discharging from the Troy facility directly into Pierson's Creek and its unnamed tributary [Ref. 18, pp. 5, 12-21]. On March 25, 1977, NJDEP issued Troy Chemical a Notice of Violation and Offer of Settlement (NOV/OOS) indicating that waste chemicals were allowed to enter a tributary to Newark Bay; Troy settled the NOV/OOS as stipulated [Ref. 17, p. 11]. During an inspection on April 28, 1980, NJDEP observed stormwater and wastewater flowing into Pierson's Creek and the unnamed tributary via runoff, pipes, cracks in the creek's concrete walls adjacent to a Troy building and tank farm, and overflow from Troy's industrial wastewater collection sump [Ref. 32, pp. 1-2]. NJDEP collected and analyzed samples C27080 (Stormwater runoff sample, flowing into a tributary of Pierson's Creek directly east of tank farm A), C27091 (Liquid sample, containing mercury droplets, collected at the same location as sample No. C27080), C27081 (Stormwater pipe flowing into Pierson's Creek), C27082 (Groundwater/stormwater sample flowing into Pierson's Creek through a crack in the Creek wall adjacent to Troy's Blue building), C27083 (Overflow from Troy's industrial wastewater collection sump; discharge was on the east side of Pierson's Creek approximately 50 feet downstream from the [old] locker room discharge), C27084 (Groundwater/stormwater sample flowing into Pierson's Creek through a crack in the creek wall adjacent to Troy's tank farm E), and C27085 (Stormwater flowing into Pierson's Creek on the south side of Troy's maintenance building) [Ref. 32, pp. 1-9]. The laboratory analyses indicated the presence of mercury in all of these wastestreams observed flowing into Pierson's Creek and its tributary; copper, lead, arsenic, and zinc were also detected in multiple samples [Ref. 32, pp. 3-9].

The HRS documentation record at proposal also documents the attribution of the significant increase in mercury concentrations in Pierson's Creek to the operations at the Troy facility. It states on page 34:

> The Troy Chemical facility manufactured mercury compounds from 1956 or 1957 until 1987 [Ref. 17, p. 4, 22, 57; 18, p. 2; 19, pp. 12-14; 20, p. 14; 28, p. 2; 29, pp. 2-3, 6-7; 30, pp. 1-2; 37, p. 1; 38, pp. 13, 29-30]. The facility discharged its mercury-bearing wastewater directly into Pierson's Creek until 1976, and there were additional discharges, leaks, and spills to Pierson's Creek after the facility connected to the PVSC sewer system in 1976 [Ref. 17, pp. 6, 8, 14-15; 18, pp. 5, 12-21; 30, p. 3; 32, pp. 1-9; 34, p. 2]. Troy Chemical has considered surface water and sediment conditions in Pierson's Creek and its unnamed tributary to be the principal environmental concerns associated with the site, and the company has reported that its former operations have contributed to the mercury detected in sediment within the concrete ditch and downstream areas of Pierson's Creek [Ref. 19, p. 11; 38, pp. 59-60, 84; 39, pp. 9, 16, 29].
> . . .
>
> In July 1979, EPA collected a sediment sample from Pierson's Creek just downstream of the mercury wastewater treatment system and reported a mercury concentration of 22,400 mg/kg, compared to upstream concentrations of 140 and 191 mg/kg; mercury was also detected above background in samples collected downstream of the facility [Ref. 30, pp. 4-7]. . . . The observed

> release to Pierson's Creek and associated wetland areas is supported by the October 2012 EPA sampling data.
>
> Although there are other possible sites in the vicinity of the Troy Chemical facility, the release samples show concentrations of mercury, a site-attributable contaminant, that are significantly above the concentrations in background samples [Figure 3]. . . .
>
> In 2010, Troy Chemical assessed other point source and non-point source contributions to sediment contamination, including industrial properties in the immediate vicinity of the Troy Chemical facility and Pierson's Creek: Former Red Star property to the immediate south, Globe Metals property to the immediate east, Former Albert Steel Drum/Prentiss Drug Co. (ASD/PDC) property to the immediate north, and Former Engelhard property to the south of Former Red Star [Ref. 38, pp. 3-4, 35-42]. None of these properties were identified as a contributor of the sediment mercury contamination [Ref. 38, pp. 35-42]. Based on the assessment, Troy concluded that the historical information and available sediment data indicate at least a partial contribution of mercury from Troy Chemical operations [Ref. 38, pp. 3-4].
>
> Based on these considerations, the observed release to surface water is considered to be at least partially attributable to the Troy Chem Corp Inc site.

As identified in the HRS documentation record at proposal, the EPA correctly documented that the Troy facility is associated with manufacturing mercury compounds and documented that mercury-bearing wastewater was discharged into Pierson's Creek. As also identified in the HRS documentation record at proposal, References 17, 18, 19, 20 and 30, as identified on page 34 of the HRS documentation record at proposal and in the quoted text above, provide documentation that the discharge of mercury-bearing waste from the Troy facility directly to Pierson's Creek occurred over several years between 1956 and 1976. The Site, as scored in the HRS documentation record at proposal, is based on a historical release of mercury to Pierson's Creek that is attributable to the former Troy facility; the EPA is not attributing mercury contamination to ongoing operations at the current Troy facility for purposes of this rulemaking.

The EPA also documented further evidence of mercury-bearing waste being released from the former Troy facility to Pierson's Creek, supporting that mercury contamination in Pierson's Creek is attributable, at least in part, to historic operations at the Troy facility. As quoted above, during a site inspection, the NJDEP observed and documented that uncontrolled runoff leaking out of pipes and cracks from facility operations and containing mercury was entering directly into Pierson's Creek. In addition to documented mercury-bearing waste leaving the Troy facility and entering directly into Pierson's Creek, the EPA also considered whether other downstream and upstream facilities were potential contributors to the mercury contamination in the zone of contamination. While there may have been multiple contributors of general contamination to the creek, the EPA was unable identify any other sources of mercury that could be contributing to the significant increase of mercury contamination in the zone of contamination for purposes of this rulemaking. Thus, as discussed above in this section, some portion of the significant increase in the release of mercury at the Site is attributable to the Troy facility

The mercury contamination that was identified in the zone of contamination was determined to contain the highest concentration of mercury at sample SD-25B located immediately downgradient of the PPE; mercury concentrations downgradient from sample SD-25B decreased as the distance from the PPE increased. This decreasing concentration of mercury in the sediment downgradient of the Troy facility indicates that there are no other significant contributors of mercury to the contamination identified in the zone of contamination in Pierson's Creek. Further, commenters did not document any other release of mercury into the identified zone of contamination or to Pierson's Creek in general, and, as quoted above, Troy noted that the mercury contamination in Pierson's Creek was, at least in part, attributable to historical operations at the former Troy facility. Thus, EPA rationally determined that the significant increase in mercury contamination was not the result of contamination from other nearby facilities.

Background samples were also used to screen out other potential contributors of mercury to the zone of contamination. At this site, background samples were collected from feeder streams in the vicinity of Pierson's Creek to ensure that observed release criteria were met and to search for other possible contributors to the mercury contamination. As explained in section 3.15, Likelihood of Release - Current Release, of this support document, an observed release by chemical analysis was correctly established at the Site. Therefore, these background samples further support that other facilities are not contributors to the significant increase in mercury contamination in the zone of contamination, and that the observed release of mercury in sediments is attributable, at least in part, to the release of mercury-bearing wastewater from the former Troy facility.

Regarding Troy's assertions that additional contaminants, other than mercury, found in Pierson's Creek were not attributable to operations under previous ownership at the Troy facility, the HRS documentation record at proposal only evaluates mercury contamination at the Site and attributes only mercury contamination in Pierson's Creek to operations at the former Troy facility. The HRS does not require that every hazardous substance present be evaluated at a Site.[6] Other contaminants, as identified by the commenters, were not attributed to sources and releases from sources from the Site, and thus, other contaminants are not included in the scoring of the Site. However, the full extent of the release from the Site is not conclusively determined upon placement on the NPL and the EPA may revise the extent of contamination at the site upon further investigations during the Superfund process.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.17 Human Food Chain Threat: Food Chain Individual

Comment: Troy submitted several comments alleging the mercury in Pierson's Creek does not pose a threat to fisheries in Newark Bay or New York Harbor. Based on these comments, Troy concluded that the assigned food chain individual factor value of 20 "is not justified." Troy stated that:

> EPA's analysis assumes that fish are caught at the American Veterans Memorial Pier (69th Street Pier) in Brooklyn, New York, which is located on New York Harbor, approximately 13 miles from Pierson's Creek . . . [t]here is no assessment of the plausibility of mercury transport through the estuarine surface water environment of Newark Bay and New York Harbor.

Troy claimed that "mercury releases into Pierson's Creek cannot conceivably migrate into either Newark Bay or New York Harbor" where fisheries are located, and therefore pose no threat to the human food chain. Troy asserted that this statement is supported by scientific studies and bases these claims on the following comments:

- Troy stated, "mercury that was discharged into Pierson's Creek is likely still contained in the creek sediments." Troy offered several reasons for this conclusion.
    - Mercury releases to Pierson's Creek would "rapidly settle" into creek sediments as a result of the tendency of mercury to adhere to particulate and organic carbon.
    - According to hydraulic studies, as the majority of Pierson's Creek is at a lower elevation than Port Newark Channel, there is "little or no mean flow in the creek."
    - "Tide gates at the mouth of Pierson's Creek prevent tidal intrusions and create stagnant conditions except under rare, high-flow events."

[6] The NPL has a very narrow purpose: to establish, quickly and inexpensively, a rough list identifying and prioritizing sites that may warrant response action under CERCLA. See Wash. State Dep't of Transp. v. EPA, 917 F.2d 1309, 1310 (D.C. Cir. 1990). As stated in the legislative history of CERCLA (Report of the Committee on Environment and Public Works, Senate Report No. 96-848, 96th Cong., 2d Sess. 60 [1980]), the NPL serves primarily as an informational and management tool.

    - Because tide gates "restrict discharges and the conveyance capacity of the entire Pierson's Creek channel is low," velocities in Pierson's Creek are therefore "expected to be small;" thus, re-suspension of mercury deposited in sediments is unlikely.
- Modeling of sediment transport and mercury transport for Newark Bay "indicates that Pierson's Creek is not a significant source of mercury to Newark Bay or New York Harbor."
- Even if contaminated creek sediments do migrate into the Port Newark Channel, they would settle near the Pierson's Creek outfall "in the deep, dredged shipping channel" within approximately 500 feet of the mouth of the creek, and would not reach any shallow sub-tidal flats.
- The Port Newark Channel is regularly dredged by the U.S. Army Corps of Engineers. The volume of sediment dredged—60,500 cubic yards per year on average between 1951 and 2002 —"far exceeds any potential contributions from Pierson's Creek, and therefore any mercury that was discharged from Pierson's Creek into Port Newark Channel has likely already been removed by routine dredging."
- Sediment transport models show that sediment moves from New York Harbor to Newark Bay via Arthur Kill and Kill van Kull. This is "contrary to the transport direction that would have to occur if Pierson's Creek were to cause impacts to New York Harbor."
- Even during rare major storms that could temporarily reverse the direction of sediment transport, any Pierson's Creek sediment deposited in Port Newark Channel would not move into Newark Bay or New York Harbor. Such events would not affect deep sediments in shipping channels like the Port Newark Channel, as it is too deep for tidal/wave action to mobilize sediment and acts as a strong sink for sediment in the Bay.

Based on these comments, Troy asserted that "there is no potential food chain threat caused by mercury from Pierson's Creek," and the food chain individual score of 20 assigned at proposal should instead be zero.

Response: The human food chain threat is correctly evaluated and documented in the HRS documentation record at proposal and correctly assigns the food chain individual factor value of 20, in accordance with the HRS requirements. The HRS documentation record at proposal identified an observed release of mercury to Pierson's Creek; mercury is assigned a bioaccumulation potential factor value of greater than 500; additionally, the EPA documented that a fishery is present within the 15-mile target distance limit (TDL) and therefore correctly assigned the Food Chain Individual Factor Value of 20.

The HRS Sections 4.1.3.3 and 4.1.3.3.1 contain directions for assigning the human food chain individual factor value. HRS Section 4.1.3.3, *Human food chain threat-targets*, states:

> Evaluate two target factors for each watershed: food chain individual and population. For both factors, determine whether the target fisheries are subject to actual or potential human food chain contamination.
>
> . . .
>
> In addition, consider all other fisheries that are partially or wholly within the target distance limit for the watershed, including fisheries partially or wholly within the boundaries of an observed release for the watershed that do not meet any of the three criteria listed above, to be subject to potential human food chain contamination. If only a portion of the fishery is within the target distance limit for the watershed, include only that portion in evaluating the targets factor category.

HRS Section 4.1.3.3.1, *Food chain individual*, states:

> Evaluate the food chain individual factor based on the fisheries (or portions of fisheries) within the target distance limit for the watershed. Assign this factor a value as follows:
>
> • If any fishery (or portion of a fishery) is subject to Level I concentrations, assign a value of 50.
> • If not, but if any fishery (or portion of a fishery) is subject to Level II concentrations, assign a value of 45.
> • If not, but if there is an observed release of a hazardous substance having a bioaccumulation potential factor value of 500 or greater to surface water in the watershed and there is a fishery (or portion of a fishery) present anywhere within the target distance limit, assign a value of 20.

The HRS documentation record at proposal documents the human food chain threat at the Site and documents that the food chain individual factor value was correctly assigned meeting the HRS requirements for assigning a food chain individual factor value of 20. Pages 36 and 37 of the HRS documentation record at proposal state:

> The New York-New Jersey Harbor Estuary within the 15-mile TDL, including the Newark Bay Complex and other water bodies, is used for consumption fishing [Ref. 49, p. 1; 50, pp. 9, 14-16; 51,pp. 5-7]. There are fishing access locations to Newark Bay, Arthur Kill, Kill Van Kull, Upper New York Bay, The Narrows, and the tidal rivers that flow into the harbor [Figure 4; Ref. 52, pp. 18-21; 53, pp. 13-14, 29-30; 54, p. 15]. One example of a specific location within the TDL where consumption fishing has been reported is the 69th Street American Veterans Memorial Pier, located in Brooklyn along the eastern edge of Upper New York Bay [Figure 4; Ref. 53, pp. 29-30; 54, pp. 15, 22, 29; 55, p. 1]. The available documentation does not demonstrate that the fishery is located within the zone of contamination; therefore, the target fishery is evaluated for potential contamination [Figures 3, 4; Ref. 1, Section 4.1.3.3; Ref. 50, p. 14].
>
> . . .
>
> 4.1.3.3.1 Food Chain Individual
>
> There is an observed release to surface water of at least one hazardous substance (mercury) with a bioaccumulation potential factor value of 500 or greater and there is a fishery present within the 15-mile TDL [see Sections 4.1.2.1.1, 4.1.3.2.1, and 4.1.3.3]. Therefore, a food chain individual factor value of 20 is assigned [Ref. 1, Section 4.1.3.3.1].
>
Sample ID:	PC-SD25B, PC-SD23A, PC-SD23B, PC-SD17B, PC-SD14A, PC-SD14B, PC-SD14C, PC-SD13B
Hazardous Substance:	Mercury
Bioaccumulation Potential:	50,000
References:	See Section 4.1.2.1.1

The human food chain threat targets and the food chain individual factor value were correctly established in HRS documentation record at proposal. As identified in section 3.15, Likelihood of Release - Current Release, of this support document, an observed release of mercury was correctly established in accordance with the HRS. The HRS assigns mercury a bioaccumulation potential factor value of 50,000 (this value was not challenged by the commenters) and a fishery is documented in the HRS documentation record at proposal to be located within the 15-mile TDL.

Troy acknowledges the presence of fisheries within the TDL in its comments when it is refuting sediment transport by stating that it is "implausible that any Pierson's Creek sediment could have migrated into either

Newark Bay or New York Harbor **where fisheries are located**" [emphasis added] (Troy Chemical comments, docket ID EPA-HQ-SFUND-2013-0635-0021). Additionally, Troy comments that contaminated sediments are not likely to migrate to the fisheries, but in its rescoring of the Site, Troy scores the Potential Human Food Chain Contamination factor value the same as the HRS documentation record at proposal of 0.0000003 (which, per HRS Section 4.1.3.3.2.3, *Potential human food chain contamination*, would only receive a score if a fishery is present within the TDL).

As cited above, to assign a food chain individual factor value of 20, the HRS requires documentation of an observed release to surface water of a hazardous substance with a bioaccumulation potential factor value of 500 or greater, and documentation that a fishery is present in the TDL. The HRS documentation record at proposal documents that both requirements are met and, therefore, the food chain individual factor value was correctly assigned.

Regarding the specific comments that the analysis assumes that fish are caught at the American Veterans Memorial Pier, the EPA did not *assume* that fish were caught or consumed, the EPA *documented* in the HRS documentation record at proposal that fish are caught for consumption on the 69th Street American Veterans Memorial Pier, located in Brooklyn along the eastern edge of Upper New York Bay. References 49, 50, 51, 53, 54 and 55 of the HRS documentation record at proposal were all cited as primary references to support the actual presence of a fishery within the TDL; specifically, these references document that fishing occurs for consumption by humans at the 69th Street American Veterans Memorial Pier.

Sediment Transport

Regarding Troy's comments that mercury in Pierson's Creek sediment will likely not migrate into either Newark Bay or New York Harbor except under high flow events and that contaminated sediments cannot migrate to the documented fisheries, the HRS does not require documentation that contaminated sediments migrate at all, as contaminated sediments are not required to be documented within a fishery to score targets subject to potential contamination at the site. The EPA correctly applied the HRS as explained in this section and documented an observed release of mercury and a fishery within the 15- mile TDL.

To the extent that the commenter is claiming that mercury contamination in Pierson's Creek cannot migrate because it adheres to sediment in a creek that has "little or no mean flow," this is also not correct. Pierson's Creek is not stagnant, and as the commenter points out, during high flow events the average 24-hour storm flow rate in Pierson's Creek can reach 3 feet per second at the mouth of the Creek. Troy further points out that this rate is only 14.4 % of the calculated peak flow rate, meaning that flow rates in Pierson's Creek are not stagnant and are capable of transporting any sediment that has not been contained. Sediments in Pierson's Creek have not been contained, and the commenters did not assert that sediments in the Creek have been contained. Nor has Troy provided any documentation supporting its claim that mercury contamination in Pierson's Creek cannot migrate.

While the HRS does not consider the availability of contamination in sediments or the dynamics of sediment transport, in its comments Troy admits that during storm events contaminated sediments will migrate from Pierson's Creek into the Port Newark Channel. Specifically, Troy stated that "[i]n the unlikely event that impacted sediment does migrate from Pierson's Creek into Port Newark Channel, it would be deposited near the Pierson's Creek outfall" (Troy Chemical comments, docket ID EPA-HQ-SFUND-2013-0635-0021). Further Troy stated that "entrained sediments [during high flow conditions] entering Port Newark Channel from Pierson's Creek will settle to the bed of Port Newark Channel" (Troy Chemical comments, docket ID EPA-HQ-SFUND-2013-0635-0021). Therefore, even though not required by the HRS, Troy agrees that mercury contamination does migrate from Pierson's Creek into bodies of water where Troy admits that fisheries are present.

Regarding Troy's comment that the annual dredging in the Port Newark Channel would remove mercury contaminated sediments from the Channel, as stated above, the HRS fishery target value of 20 was assigned for the Food Chain Individual factor value based on the observed release of a hazardous substance into surface water

with a bioaccumulation factor of 500 or more, and the presence of a fishery within the target distance limit. In this case, mercury was released into Pierson's Creek and fisheries are present in the New York Harbor, which is within the 15 mile target distance limit. The HRS does not require documentation that the released contaminant has migrated, or is continuing to migrate, to the location of the fishery. Furthermore, the Agency notes that the mercury contaminated sediments in Pierson's Creek are uncontained and can continue to migrate into Port Newark Channel and continue to pose a threat to the downstream fishery. Therefore, the dredging of the Port Newark Channel does not change the assigned target value, the site score or impact the listing decision.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.18 Environmental Threat Targets: Wetlands

Comment: Troy and 429 Delancy submitted comments calling into question the delineation/identification of wetlands in Pierson's Creek. These comments included the following:

- Troy asserted that the wetland length scored was based on several wetland evaluation soil boring locations, but that one of these locations (SB-9) should not have been classified as wetland.
- Troy claimed there is inadequate information in the HRS package to determine what the impact of the mischaracterization of SB-9 would be on wetland length measurements.
- Troy and 429 Delancy both contended that the stretch of Pierson's Creek along the 429 Delancy property (the former Engelhard property) has been designated as "state open waters" by NJDEP, and that such designation means that stretch is not wetland.

Based on the above points, Troy argued that the sensitive environments Level II score should be reduced from 25 in the HRS documentation record at proposal to zero.

Response: The wetlands were correctly identified and scored in the HRS documentation record at proposal, consistent with the HRS. As shown in subsections below, the locations of the soil borings were not directly used to calculate wetland length—the length was based on the final determination of the wetlands expert conducting the delineation; and soil boring location SB-9 was correctly classified as representing the border of the wetland. Additionally, the information in the HRS package at proposal was sufficient to verify the length of wetlands scored as subject to actual Level II contamination. Further, in response to these comments, the EPA verified the intent of the authors of the October 2012 wetland delineation presented in Reference 5 of the HRS documentation record at proposal. This verification is contained in a June 2014 Wetland Delineation Report (included as Attachment 2 of this support document), which confirmed the conclusions of the October 2012 wetland delineation. Finally, the NJDEP designation of the Pierson's Creek stretch along the 429 Delancy property as "state open waters" for state purposes does not preclude the existence and proper identification of wetlands for CERCLA and HRS purposes along the creek.

Specific comments are addressed in the following subsections:

- 3.18.1 Wetland Frontage
- 3.18.2 Documentation of Wetland Delineation
- 3.18.3 NJDEP Designation of Pierson's Creek

3.18.1 Wetland Frontage

Comment: Troy asserted that the delineation/identification of the wetlands adjacent to Pierson's Creek and the related length (frontage) of the Level II wetlands are incorrect.

Citing page A-20 of the draft HRS Guidance Manual, Interim Final, November 1992, Troy stated that "[b]ased on HRS guidance, a wetland must support the prevalence of rooted emergent hydrophytes (hydrophytic species must be at least 50% of the total vegetation)." Troy added that "HRS wetland criteria require the presence of hydric soils" and that absent hydric soils, an area may be classified a wetland only if hydrophytes are established.

Troy noted that 9 soil borings were collected during the wetlands evaluation, and contended that "[b]ased on the data obtained at 4 boring locations on the former Englehard [*sic*] property 0.15 miles of wetlands was delineated." Troy asserted that for the 4 locations—SB-1, SB-4, SB-7, and SB-9—"Weston (EPA's consultant) noted that soils and vegetative conditions indicated the presence of a wetland" (citing to field logbooks included as Reference 5 of the HRS documentation record at proposal). However, Troy commented that one of these borings, SB-9, did not exhibit hydrophytic vegetation in excess of 50% of the total vegetation; Troy argued this location does not meet HRS wetland criteria and should not have been designated as wetland.

Response: The delineation and identification of the wetlands contiguous to Pierson's Creek were correct based on the HRS definition of wetlands, and the resulting length of wetland frontage used in HRS scoring was accurate in the HRS documentation record at proposal, consistent with the HRS. The extent of wetlands identified was not solely based on soil boring locations, but rather the complete assessment carried out by the wetlands scientist performing the delineation. Soil boring SB-9 was not designated as wetlands; it was instead determined to be characteristic of the upland border of the wetlands. The wetlands rating value for wetland frontage in Pierson's Creek subject to Level II actual contamination was correctly assigned in the HRS documentation record at proposal.

HRS Section 4.0.2, *Surface water categories*, identifies the water classifications eligible for evaluation by the HRS. It states:

> Rivers include:
>
> • Perennially flowing waters from point of origin to the ocean or to coastal tidal waters, whichever comes first, and **wetlands contiguous to these flowing waters**. [emphasis added]
>
> . . .

While the commenters did not challenge the identification of Pierson's Creek as perennial, the HRS documentation record at proposal states that Pierson's Creek is perennial and therefore the creek and wetlands contiguous to the creek are eligible for inclusion in the HRS evaluation. Page 27 of the HRS documentation record at proposal states:

> Due to a drainage improvement project completed in 2007 (* - see Note below), the perennial portion of Pierson's Creek now begins just south of the Troy Chemical facility, where it receives stormwater runoff from a large culvert as well as the concrete channel and east ditch on the Troy property [Ref. 5, p. 6; 38, pp. 14-21, 80].

HRS Section 4.1.4.3.1.2, *Level II concentrations*, directs how wetland frontage scored as subject to Level II actual contamination is measured for the HRS evaluation. It states:

> For those sensitive environments that are wetlands, assign an additional value from Table 4-24
> . . . .
>
> Estimate the total length of wetlands along the hazardous substance migration path (that is, wetland frontage) in the area of Level II concentrations and assign a value from Table 4-24 based on this total length. Estimate this length as specified in section 4.1.4.3.1.1, except: for an isolated wetland or for a wetland where the probable point of entry to the surface water is in the wetland,

> use the perimeter of that portion of the wetland subject to Level II (not Level I) concentrations as the length.

HRS Table 4-24 identifies not only the rating values, but also cites in a footnote to the definition of wetland to be used for HRS purposes.

Table 4–24—Wetlands Rating Values for Surface Water Migration Pathway

Total length of wetlands[a] (miles)	Assigned value
Less than 0.1	0
0.1 to 1	25
Greater than 1 to 2	50
Greater than 2 to 3	75
Greater than 3 to 4	100
Greater than 4 to 8	150
Greater than 8 to 12	250
Greater than 12 to 16	350
Greater than 16 to 20	450
Greater than 20	500

[a] **Wetlands as defined in 40 CFR section 230.3.** [emphasis added]

As cited in the footnote to Table 4-24, 40 CFR section 230.3 provides the following definition:

> The term *wetlands* means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.

Thus, wetlands meeting this definition are eligible wetlands for HRS purposes. The 40 CFR section 230.3 definition of wetlands does not specifically require that 50% of the total vegetation be hydrophytic species. It requires under normal conditions "a **prevalence** of vegetation typically adapted for life in saturated soil conditions." Such language does not mandate a simple majority; rather it requires that the dominant vegetation type must be vegetation typically adapted for life in saturated soil conditions.

The HRS documentation record at proposal discusses the identification of wetlands scored as subject to Level II actual contamination. Page 40 of the HRS documentation record at proposal states:

> The zone of contamination (i.e., area where observed release by chemical analysis is documented) along the surface water migration pathway downstream of the site source extends from the PPE at sample location PC-SD25B south to sample location PC-SD13B approximately 0.25 mile downstream [Figure 3; see Section 4.1.2.1.1]. There are HRS-eligible wetlands along the zone of contamination, and the total wetland frontage considered as subject to actual contamination is approximately 0.15 mile [Figures 2, 3; Ref. 1, Section 4.1.4.3.1; 5, pp. 43-62]. There are no media-specific benchmarks for sediment, so the target wetlands are subject to Level II concentrations [Ref. 1, Sections 2.5 and 4.1.4.3; 2, pp. BII-8].

The HRS documentation record at proposal describes the zone of actual contamination[7] in Pierson's Creek based on sediment samples meeting observed release criteria. It states on page 40:

> The sediment concentrations meet the criteria for Level II concentrations because there are no media-specific benchmarks for sediment [Ref. 1, Sections 2.5 and 4.1.4.3.1; 2, p. BII-8]:

TABLE 11. SAMPLES FOR OBSERVED RELEASE				
Sample ID	**Distance from PPE**	**Hazardous Substance**	**Concentration (mg/kg)**	**Reference(s)**
PC-SD25B	0 feet	Mercury	1,770	Figure 3; Ref. 10, pp. 27, 61
PC-SD23A	180 feet	Mercury	737 J (402.73)	Figure 3; Ref. 10, pp. 5, 16, 58; 16, pp. 1-8, 18
PC-SD23B	180 feet	Mercury	1,130	Figure 3; Ref. 10, pp. 19, 58
PC-SD17B	700 feet	Mercury	855 J (467.21)	Figure 3; Ref. 9, pp. 3-5, 24, 80; 16, pp. 8, 18
PC-SD14A	1,150 feet	Mercury	694 J (379.23)	Figure 3; Ref. 8, pp. 5, 30, 81; 16, pp. 8, 18
PC-SD14B	1,150 feet	Mercury	1,290 J (704.92)	Figure 3; Ref. 9, pp. 3-5, 10, 75; 16, pp. 8, 18
PC-SD14C	1,150 feet	Mercury	1,400 J (765.03)	Figure 3; Ref. 9, pp. 3-5, 13, 76; 16, pp. 8, 18
PC-SD13B	1,300 feet	Mercury	924 J (504.92)	Figure 3; Ref. 8, pp. 5, 29, 80; 16, pp. 8, 18

> J – This flag indicates that the result qualified as estimated; direction of bias is unknown [Ref. 8, pp. 1-5; 9, pp. 1-5; 10, pp. 1-5]. These results have been adjusted according to the EPA fact sheet "*Using Qualified Data to Document an Observed Release and Observed Contamination*"; adjusted values are shown in parentheses [Ref. 16, pp. 1-8, 18].

Page 41 of the HRS documentation record at proposal describes the length of wetlands frontage subject to Level II actual contamination, and the assignment of a wetlands rating value (and Level II concentrations factor value) of 25, consistent with the HRS:

> There are HRS-eligible wetlands along the zone of contamination, and the total wetland frontage subject to actual contamination is approximately 0.15 mile [Figure 3; Ref. 1, Section 4.1.4.3.1; Ref. 5, pp. 43-62].

TABLE 12. LEVEL II CONCENTRATIONS – WETLANDS			
Wetland	**Wetland Frontage**	**Wetlands Rating Value (HRS Table 4-24)**	**Reference**
Pierson's Creek	0.15 mile	25	Figures 2, 3; Ref. 5, pp. 43-62

The length of wetlands in Pierson's Creek was not directly based on the soil boring locations. Rather, the soil boring locations were data points considered in the overall assessment of wetlands in the Creek as explained in the field logbooks. The HRS documentation record text at proposal, quoted above, cites pages 43-62 of Reference 5 of the HRS documentation record containing field logbooks that document the wetland delineation. Page 44 of Reference 5 of the HRS documentation record at proposal (cited in text quoted above), does indeed state that "wetland soils/hydrology/vegetation were confirmed at locations SB-1, SB-4, and SB-7" (this is also shown on data forms on pages 45-46, 51-52, and 57-58 of Reference 5 of the HRS documentation record at proposal). However, these soil boring locations did not represent the full extent/boundaries of the wetlands identified. Page

[7] The surface water instream segment between the PPE and the furthest downstream observed release samples (HRS section 4.1.1.2)

44 of Reference 5 of the HRS documentation record at proposal noted that "flag locations F-1 to F-14 delineated the edge of the wetland along the creek. Soil boring locations SB-2, SB-3, SB-5, SB-6, and SB-8 showed the upland areas just upslope from the wetland."

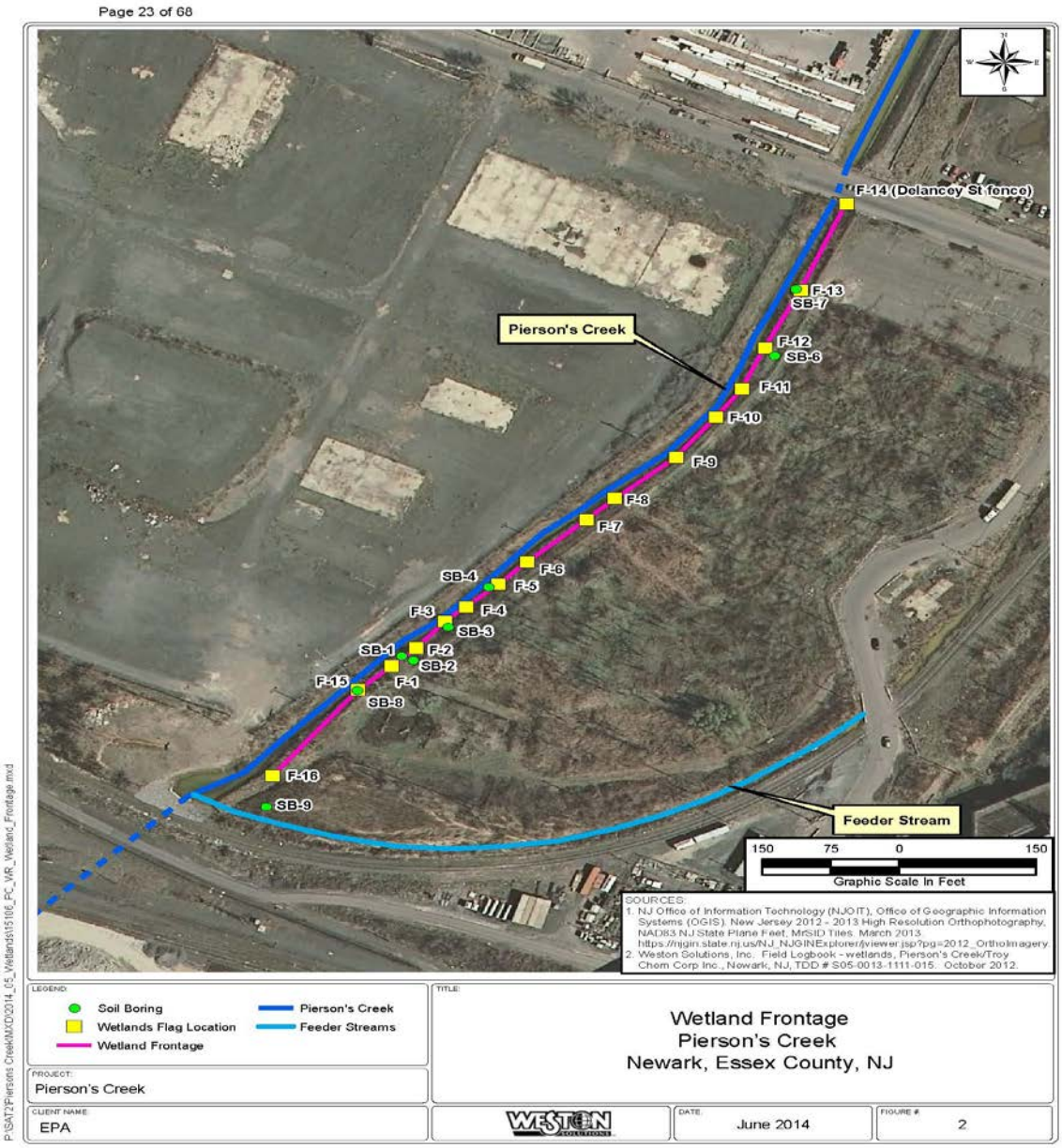

Figure 2 – Map showing the wetland frontage determined to be present in Pierson's Creek. This map shows the locations of the soil borings and flag locations that were used in the October 2012 wetland delineation.

In response to these comments, the EPA verified the intent of the authors of the October 2012 wetland delineation presented in Reference 5 of the HRS documentation record at proposal. This verification is contained in a June 2014 Wetland Delineation Report (included as Attachment 2 of this support document) that confirmed the conclusions of the October 2012 wetland delineation (see pages 13 and 23 of Attachment 2 of this support document). Figure 6 on page 23 of Attachment 2 of this support document contains a plot of the flag locations.

Finally, as shown on page 43 of Reference 5 of the HRS documentation record at proposal, following the field assessment the wetlands scientist describes the wetlands extent, concluding that "there is a small fringe wetland, at the base of a steep slope, along the east edge of Pierson's Creek, from the Conrail property north across the 429 Delancy property to Delancy Street." This determination made by the wetlands scientist is the basis for the wetland extent described in the HRS documentation record at proposal (this extent is shown as a purple line on Figure 3 of the HRS documentation record at proposal, also cited in text quoted above [See also Figure 1 of this support document]).

The stretch of the wetlands within the zone of actual contamination corresponds to the 0.15-mile length scored in the HRS documentation record at proposal. Figure 1 of this support document shows that the zone of actual contamination (signified by the yellow line) extends from upstream of Delancy Street to the farthest downstream observed release sample, SD13B. (Thus, the 0.15-mile length corresponds to the distance where the wetland [purple line] overlaps the zone of actual contamination [yellow line] on Figure 1 of this support document)

Specifically regarding wetland delineation soil boring location SB-9, this location was not designated as within wetland, but instead was identified as illustrating the upland wetland boundary for this part of the wetland. This identification is supported in multiple ways.

First, as noted above, the soil boring locations by themselves were not the direct basis for the extent of the wetlands identified or the length of wetland frontage scored as subject to Level II actual contamination; and this soil boring location was not used directly to determine the downstream extent of the wetlands subject to actual contamination (observed release sample SD13B served this purpose).

Further, SB-9 is not described as wetland. Rather, as shown on pages 43-44 and 61-62 of Reference 5 of the HRS documentation record at proposal, this location was determined to constitute an example of the boundary of the wetland. Pages 43 notes that "SB-9 is in phragmites near [the] south end of Pierson's [Creek] near [the] Conrail line . . . SB-9 is characteristic of this entire wetland, both sides of Pierson's Creek (phragmites, wet area—floods), at [the] southern end of this open section (Conrail & Engelhard)." Page 44 states that "the edge of the wetland was confirmed at location SB-9," and page 62 again identifies location SB-9 as a "wetland boundary." [8]

Regarding Troy's citation of the draft HRS Guidance Manual, Interim Final, November 1992, in support of its assertion that to identify wetlands hydrophytic species must be at least 50% of the total vegetation, this guidance manual imposes no requirements for two reasons. First, as explained above in section 3.12, Consistency with Guidance, of this support document, guidance only aids the scorer in the HRS evaluation of the Site if needed depending on site-specific conditions. Second, and more importantly the HRS itself contains the specifications for identifying wetlands for HRS scoring purposes, and EPA followed the HRS to identify wetlands in this rulemaking. As quoted above, the HRS refers to the definition in 40 CFR Section 230.3, which specifies in part "a **prevalence** of vegetation typically adapted for life in saturated soil conditions." The HRS Guidance Manual does not suggest a 50% condition; instead, page A-20 cited by Troy echoes the same 40 CFR section 230.3 language, using the term "prevalence." In any event, although not an HRS requirement, soil boring locations used as part of the wetlands delineation and classified as wetlands (SB-1, SB-4, and SB-7) *were* determined to exhibit >50% hydrophytic vegetation—as shown on pages 45, 51, and 57 of Reference 5 of the HRS documentation record at proposal, which note >50% of the dominant species at these locations are "OBL [obligate wetland], FACW [facultative wetland] or FAC [facultative] (excluding FAC- [facultative, less frequently found in wetlands])."

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

[8] Page 30 of the June 2014 reanalysis of wetland data in Attachment 2 of this support document also describes location SB-9 as "located at the wetland margin."

3.18.2 Documentation of Wetland Delineation

Comment: Regarding the extent of wetlands in Pierson's Creek subject to actual Level II contamination and the alleged mischaracterization of boring SB-9 location as wetland, Troy asserted that there is inadequate documentation in the HRS package to allow an assessment of the impact of this error on the length of wetland scored.

Troy commented that there is no map available in the HRS package showing boring locations; Troy claims such information is needed to measure the length of the wetland. Troy further noted that there is no available photographic evidence of vegetation/soil at wetland delineation boring locations.

Troy also asserted that "[e]ssential to the notice and comment process is that EPA 'provide sufficient factual detail and rationale for the rule to permit interested parties to comment meaningfully.' Fla. Power & Light v. US., 846 F.2d 765, 771 (D.C. Cir. 1988)." Troy stated that "[t]he failure to provide adequate information on where the borings were has deprived Troy of the opportunity to meaningfully comment on this aspect of the proposed listing."

Response: The information contained in the HRS package at proposal was sufficient to reproduce the length of wetland frontage scored as subject to Level II contamination, soil boring location SB-9 was not used in determining the length of the wetland frontage, rather, SB-9 was used to establish the upland border of the wetlands but not itself wetland.

As shown in section 3.18.1, Wetland Length, of this support document, the wetland frontage length subject to actual Level II contamination was correctly evaluated, consistent with the HRS. The extent of wetlands identified was based on the complete assessment carried out by the wetlands scientist performing the delineation, and was directly based on the wetland scientist's determination that wetlands are present along the east edge of Pierson's Creek, from the Conrail property north across the 429 Delancy property to Delancy Street (shown on page 43 of Reference 5 of the HRS documentation record at proposal)[9]. The extent of wetlands identified was not solely based on soil boring locations, although these points were considered in the wetland scientist's assessment. A wetlands scientist visited the site, made visual observations, collected soil samples, and evaluated vegetation surrounding the Creek for hydrophytic properties; based on the expert opinion of the wetland scientist, the sum total of the information garnered from this investigation (See Attachment 2 of this support document) indicated that a wetland is present along Pierson's Creek as shown in Figure 2 of this support document. Soil boring SB-9 was not designated as wetlands; it was instead determined to be on the upland border of the wetlands. Therefore Troy's assertion that it was improperly characterized as wetlands is incorrect and this assertion has no effect on the extent of wetlands identified, or the length of wetlands frontage scored as subject to Level II contamination.

As quoted in section 3.18.1 of this support document immediately above, HRS Sections 4.0.2 and 4.1.4.3.1.2 contain the HRS instructions for identifying HRS eligible wetlands and delineating wetland frontage. In summary, HRS eligible wetlands, including those evaluated as subject to Level II contamination, are those areas that under normal circumstances support a prevalence of vegetation typically adapted for life in saturated soil conditions and are in the zone of contamination as defined by the PPE for the site and the observed release sample locations.

The length of 0.15 mile wetland scored can be verified based on available information in the HRS package:

- Field logbook information contained in Reference 5 (and detailed in section 3.18.1, Wetland Length, of this support document) provides the basis for the extent of wetlands identified.
- The extent of wetlands identified is plotted on Figure 1 of this support document, shown as a purple line.

[9] See Figure 1 of this support document. The wetland frontage included in the HRS evaluation ends at sample SW13 (end of the zone of contamination).

- Page 40 of the HRS documentation record at proposal describes the zone of actual contamination in Pierson's Creek based on sediment samples meeting observed release criteria. The zone of actual contamination is also plotted on Figure 3 of the HRS documentation record at proposal, shown as a yellow line.
- Page 41 of the HRS documentation record at proposal describes the length of wetlands subject to Level II actual contamination, citing Figure 3 of the HRS documentation record at proposal.
- Using Figure 3 of the HRS documentation record at proposal, the wetland frontage subject to Level II actual contamination can be measured based on the portion of wetland frontage within the zone of actual contamination.

Regarding the lack of a map showing the boring location and photographic evidence of vegetation type, while these documents are one form of documentation, they are not required by the HRS for documenting the presence of wetlands. As the soil boring locations themselves were not the direct basis for the extent of the wetlands identified, a map showing these boring locations is not essential to reproduce the scored length of 0.15 mile wetland subject to actual Level II contamination. Further, there is no HRS requirement for photographic evidence to document the presence of wetland vegetation.[10] As identified above, the EPA provided field logbooks support the wetland delineation. (The field logbooks note the street locations and expert descriptions of the vegetation supporting the presence of a wetland).

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.18.3 NJDEP Designation of Pierson's Creek

Comment: Both Troy and 429 Delancy questioned the extent of wetlands identified in Pierson's Creek based on NJDEP designations for this water body. These commenters contended that according to a November 21, 2006, NJDEP Freshwater Wetlands Letter of Interpretation, there are no wetlands adjacent to the Delancy property (the former Engelhard property) in Pierson's Creek, and that this stretch is instead classified as "state open waters."

Further, commenter 429 Delancy questioned the sensitive environments factor value being based on "presumed presence of wetlands fronting the entire stretch of the Creek as it passes through the Delancy Property." Troy asserted that this contradiction contributes to the uncertainty in the length of the wetland scored.

Response: The presence of wetlands contiguous to Pierson's Creek adjacent to the Delancy property (and the related wetland frontage scored as subject to Level II actual contamination) was correctly identified for HRS scoring purposes in the HRS documentation record at proposal, consistent with the HRS (See Figure 1 of this support document). The NJDEP designation of Pierson's Creek as "state open waters" does not negate this.

As quoted in section 3.18.1, Wetland Frontage, of this support document, HRS Sections 4.0.2 and 4.1.3.1.2 provide the HRS instructions for identifying HRS eligible wetlands and delineating wetland frontage. In summary, HRS-eligible wetlands are those areas that under normal circumstances support a prevalence of vegetation typically adapted for life in saturated soil conditions and are in the zone of contamination as defined by the PPE for the site and the sample locations meeting observed release criteria.

As also explained in section 3.18.1 of this support document, the delineation and identification of the wetlands adjacent to Pierson's Creek were correctly based on the HRS definition of wetlands, and the resulting length of wetland frontage used in scoring was accurate in the HRS documentation record at proposal, consistent with the HRS. The identification of wetlands contiguous to Pierson's Creek as part of the surface water body being evaluated was based on the October 2012 field assessment performed by a wetlands scientist (documented in Reference 5 of the HRS documentation record at proposal), and the assessment concluded that wetlands (meeting

[10] Although not required, the June 2014 Wetland Delineation Report (Attachment 2 of this support document) shows soil boring locations on page 23 (Figure 6) and includes a photographic log on pages 24-30.

the HRS Table 4-24-specified definition contained in 40 CFR section 230.3) are present along the east edge of Pierson's Creek, from the Conrail property north across the 429 Delancy property to Delancy Street.[11]

This determination is governed by the HRS and is not negated by the 2006 NJDEP designation of Pierson's Creek as "state open waters".[12] The identification of wetlands for HRS scoring purposes is dependent on the finding of wetlands meeting the 40 CFR section 230.3 definition, as specified by HRS Table 4-24 (and such a finding may or may not coincide with state designations). Furthermore, the NJDEP designation of Pierson's Creek as "state open waters" applies to the main channel of Pierson's Creek, but does not exclude the existence of wetlands on the banks of this channel and does not state that there are no wetlands on the edge of the Creek.[13]

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.19 Consideration of Revisions in Mercury River Persistence Value

On January 30, 2014, after the Site was proposed to the NPL on December 12, 2013 but before the close of the public comment period on March 27, 2014, the EPA updated the Superfund Chemical Data Matrix (SCDM). As part of this update, the river persistence value of mercury was changed.[14] To be consistent with prior HRS final updates that have included chemical value updates, the EPA has considered and revised the mercury river persistence value in the Pierson's Creek HRS documentation record at promulgation. However, as explained further below, this change to the mercury river persistence value alone **does not** affect any factor category value or the Site score. EPA's revision to the mercury river persistence value is based on an estimate of the volatility of mercury using up-to-date projection procedures; the river persistence factor value (which reflects the length of time mercury will remain in rivers under normal conditions before it volatilizes into the atmosphere) for mercury has been updated from 0.4 to 1.0.

As shown on pages 35 and 39 of the HRS documentation record at promulgation, this change in the river persistence value for the mercury results in a combined toxicity/persistence/bioaccumulation factor value of 5×10^8 for the human food chain threat (previously 2×10^8 at proposal), and a combined ecotoxicity/persistence/bioaccumulation factor value of 5×10^8 for the environmental threat (also previously 2×10^8 at proposal) assigned for mercury.

This change results in no new Site score – in other words, the score remains the same and is not revised upward or downward as a result of this change. Multiplying the revised toxicity/persistence/bioaccumulation factor value by a hazardous waste quantity factor value of 100 (see section 3.14, Hazardous Waste Quantity, of this support document) results in a human food chain threat Waste Characteristics product of is 5×10^{10} (previously 2×10^{10} at proposal) and an environmental threat Waste Characteristics product of is 5×10^{10} (previously 2×10^{10} at proposal). Applying this change through to Table 2-7, Waste Characteristic Factor Category Values, of the HRS results in the same Waste Characteristics Factor Category Value of 320 as both 5×10^{10} and $2x\ 10^{10}$ fall between the same range of values (1×10^{10} and 1×10^{11}) that correspond to an assigned factor category value of 320.

[11] See also the confirming results and conclusion on page 11-13 and 23 of the June 2014 reanalysis of wetland data (Attachment 2 of this support document).
[12] The November 21, 2006, NJDEP Freshwater Wetlands Letter of Interpretation is included as Attachment 3 to this support document.
[13] See also the conclusion on page 12 of the June 2014 reanalysis of wetland data (Attachment 2 of this support document), stating that "Pierson's Creek would in itself constitute a State Open Water, as it does not meet the exclusionary criteria found in N. J.A.C. 7:7A-1.4 Definitions".
[14] For more information on SCDM and the January 2014 revisions, please visit the Agency's website located at: http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm

Thus, updating the mercury river persistence value in the HRS documentation record at promulgation does not affect any factor category value or the Site score; this update results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.20 HRS Score

Comment: As discussed and addressed in this support document, Troy commented that the HRS documentation record at proposal incorrectly scored several aspects of the Pierson's Creek site. Troy commented that the HRS documentation record at proposal overestimated the hazardous waste quantity and asserted that a hazardous constituent quantity of 7,300 pounds should be used to determine the HRS score, resulting in a hazardous waste quantity value of 100. Troy also commented that, due to the uncertainty in the wetland length, the wetlands evaluated as subject to actual Level II contamination in the HRS documentation record at proposal should be excluded from the HRS evaluation. Troy asserted the "sensitive environment - Level II concentration" should be reduced to zero. Troy further commented that the food chain individual should be removed from the scoring of the Site due to a lack of threat to a fishery. Based on these points, Troy asserted that the correct HRS score is 0.002 and this score is below the 28.50 threshold for NPL listing.

Tables 1 and 2 below show the changes in the HRS scoring tables provided by Troy and show their estimate of the overall Site score being calculated at 0.002.

Table 1: Surface Water Overland/Flood Migration Component Human Food Chain Threat Scoresheet Submitted by Commenter

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors HUMAN FOOD CHAIN THREAT	**MAXIMUM VALUE**	**VALUE ASSIGNED**
Likelihood of Release		
14. Likelihood of Release (same as line 5)	550	550
Waste Characteristics		
15. Toxicity/Persistence/Bioaccumulation	*	2.00E+08
16. Hazardous Waste Quantity	*	100
17. Waste Characteristics	1000	320
Targets		
18. Food Chain Individual	50	0
19. Population		
19a. Level I Concentrations	**	0
19b. Level II Concentrations	**	0
19c. Potential Human Food Chain Contamination	**	0.0000003
19d. Population (lines 19a + 19b + 19c)	**	0.0000003
20. Targets (lines 18 + 19d)	**	0.0000003
21. HUMAN FOOD CHAIN THREAT SCORE ([lines 14 x 17 x 20]/82,500)	100	0.0000006

Notes:
* Maximum value applies to waste characteristics category
** Maximum value not applicable

Table 2: Surface Water Overland/Flood Migration Component Environmental Threat Scoresheet Submitted by Commenter

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors ENVIRONMENTAL THREAT	MAXIMUM VALUE	VALUE ASSIGNED
Likelihood of Release		
22. Likelihood of Release (same as line 5)	550	550
Waste Characteristics		
23. Toxicity/Persistence/Bioaccumulation	*	2.00E+08
24. Hazardous Waste Quantity	*	100
25. Waste Characteristics	1000	320
Targets		
18. Food Chain Individual	50	0
26. Sensitive Environments		
26a. Level I Concentrations	**	0
26b. Level II Concentrations	**	0
26c. Potential Contamination	**	0.001
26d. Sensitive Environments (lines 26a + 26b + 26c)	**	0.001
27. Targets (line 26d)	**	0.001
28. ENVIRONMENTAL THREAT SCORE ([lines 22 x 25 x 27]/82,500)	60	0. 002
29. WATERSHED SCORE (lines 13 + 21 + 28)	100	0.002
30. SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORE (S_{of})	100	0.002
SURFACE WATER MIGRATION PATHWAY SCORE (S_{sw})	100	0.002

Notes:
* Maximum value applies to waste characteristics category
** Maximum value not applicable

Response: The HRS documentation record at promulgation has been revised in the process of responding to public comments. The hazardous waste quantity has been revised at promulgation to 100; however, the Site score still exceeds 28.50 and is sufficient for listing on the NPL.

Sections 3.17, Human Food Chain Threat: Food Chain Individual, and 3.18, Environmental Threat Targets: Wetlands, of this support document, establish that targets have been appropriately identified and scored at proposal, and as a result, the target scoring remains unchanged in the HRS documentation record at promulgation. As explained in section 3.14.1, Tier B – Hazardous Wastestream Quantity, of this support document, the hazardous wastestream quantity value has been revised to "undetermined but greater than zero". Accordingly, a hazardous waste quantity of 100 for the surface water migration pathway (based on HRS Section 2.4.2.2, *Calculation of hazardous waste quantity factor value*) and a waste characteristics value of 320 (based on HRS Table 2-7) have been assigned at promulgation. The resulting surface water migration pathway human food chain threat and environmental threat scores have been revised to 42.66 and 53.33, respectively. The surface water migration pathway score has subsequently been revised to 95.99, the sum of the two threat scores (see HRS Section 4.1.5, *Calculation of overland/flood migration component score for a watershed*). Therefore, the HRS Site score has been revised to 47.99 at promulgation. The resulting HRS site score exceeds the 28.50 threshold to

qualify for placement on the NPL. Tables 3 and 4 below provide a comparison of the values assigned at proposal, the values assigned at promulgation, and the values assigned in Troy's comment scoresheets.

Table 3: Comparison of Human Food Chain Threat Score from Proposal, Promulgation, and Troy's Comments

Factor categories and factors	Maximum value	Value assigned in HRS documentation record at proposal	Value assigned in HRS documentation record at promulgation	Value assigned by Troy in its comments
Likelihood of Release				
14. Likelihood of Release	550	550	550	550
Waste Characteristics:				
15. Toxicity/Persistence/Bioaccumulation	(a)	2.00E+08	5.00E+08	2.00E+08
16. Hazardous Waste Quantity	(a)	10,000	100	100
17. Waste Characteristics	1,000	1,000	320	320
Targets:				
18. Food Chain Individual	50	20	20	0
19. Population:				
19a. Level I Concentrations	(b)	0	0	0
19b. Level II Concentrations	(b)	0	0	0
19c. Potential Contamination	(b)	0.0000003	0.0000003	0.0000003
19d. Population (lines 19a + 19b + 19c)	(b)	0.0000003	0.0000003	0.0000003
20. Targets (lines 18 + 19d)	(b)	20.0000003	20.0000003	0.0000003
21. Human Food Chain Threat Score ([lines 14 x 17 x 20]/82,500)	100	100	42.66	0.0000006

Table 4: Comparison of Environmental Threat Score from Proposal, Promulgation, and Troy's Comments

Factor categories and factors	Maximum value	Value assigned in HRS documentation record at proposal	Value assigned in HRS documentation record at promulgation	Value assigned by Troy in its comments
Likelihood of Release				
22. Likelihood of Release	550	550	550	550
Waste Characteristics:				
23. Toxicity/Persistence/Bioaccumulation	(a)	2.00E+08	5.00E+08	2.00E+08
24. Hazardous Waste Quantity	(a)	10,000	100	100
25. Waste Characteristics	1,000	1,000	320	320
Targets:				
26. Sensitive Environments				
26a. Level I Concentrations	(b)	0	0	0
26b. Level II Concentrations	(b)	25	25	0
26c. Potential Contamination	(b)	0.001	0.001	0.001
26d. Population (lines 19a + 19b + 19c)	(b)	25.001	25.001	0.001
27. Targets (lines 18 + 19d)	(b)	25.001	25.001	0.0000003
28. Environmental Threat Score ([lines 22 x 25 x 27]/82,500)	60	60.00	53.33	0.002
29. Watershed Score (lines 13 + 21 + 28)	100	100.00	95.99	0.002
30. Surface Water Overland/Flood Migration Component Score	100	100.00	95.99	0.002
Surface Water Migration Pathway Score	100	100.00	95.99	0.002
HRS Site Score	100	50.00	47.99	0.001

4. Conclusion

The original HRS score for this site was 50.00. Based on the above responses to comments, the Site score has been changed in the HRS documentation record at promulgation to 47.99. The final scores for the Pierson's Creek site are:

Ground Water	Not Scored
Surface Water	47.99
Soil Exposure	Not Scored
Air	Not Scored
HRS Site Score	47.99

Attachment 1: Self-Implementing PCB Cleanup and Disposal Plan, February 29, 2012

THE ELM GROUP

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WWW.EXPLOREELM.COM

March 5, 2012

-- Via Federal Express --

Ms. Judith Enck, Regional Administrator
United States Environmental Protection Agency, Region 2
290 Broadway, 26th Floor
New York, NY 10007-1866

Mr. John Gorman, Chief Pesticides and Toxic Substance Branch
United States Environmental Protection Agency, Region 2
Pesticides and Toxic Substance Branch
2890 Woodbridge Avenue, MS-105
Edison, NJ 08837-3679

RE: Self-Implementing PCB Cleanup and Disposal Plan
Troy Chemical Corporation, Inc.
One Avenue L, Newark, Essex County, New Jersey

Dear Ms. Enck and Mr. Gorman:

The ELM Group, Inc. (ELM), on behalf of Troy Chemical Corporation, Inc. (Troy), submits the enclosed Self-Implementing PCB Cleanup and Disposal Plan for review and approval. The Troy Site is located at One Avenue L, Newark, New Jersey and is the subject of a remediation pursuant to the New Jersey Department of Environmental Protection (NJDEP) Site Remediation Program. As required by 40 CFR 761.61, the plan presents the characterization and proposed remedial actions to address Polychlorinated Biphenyls (PCBs) in sediment/soil within an out-of-service, concrete-lined, storm water drainage ditch which bisects the Troy property. The scope of work outlined in the enclosed plan was developed based on discussions with Jim Haklar.

The enclosed plan has been provided to the New Jersey Department of Environmental Protection, the Essex County Department of Health & Rehabilitation, and the City of Newark in accordance with 40 CFR 761.61(a)(3).

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If you have any questions please contact us at 609-683-4848.

Sincerely,

THE ELM GROUP, INC.

Jeffrey S. Moore, MS, CHMM
Senior Project Manager

Mark D. Fisher, CHMM
Principal

MBP:kmm

Enclosure
- Self-Implementing PCB Cleanup and Disposal Plan (ELM, 02/29/12)

c: New Jersey Department of Environmental Protection
(as Attachment D to ELM's 2/29/12 Remedial Action Workplan)
Edward Capasso – Troy Chemical Corporation, Inc.
(as Attachment D to ELM's 2/29/12 Remedial Action Workplan)
Mike Festa – Essex County Dept of Health & Rehabilitation, Environmental Health Office
Marsha McGowan – City of Newark, Department of Health and Human Services

SELF-IMPLEMENTING PCB CLEANUP AND DISPOSAL PLAN

Troy Chemical Corporation, Inc.
One Avenue L, Newark, Essex County, New Jersey
NJDEP Case No. G000001344

Prepared for:

Troy Chemical Corporation, Inc.
Newark, New Jersey

February 29, 2012

Prepared by:

The ELM Group, Inc.
218 Wall Street, Research Park
Princeton, NJ 08540-1512
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Michael B. Pague, PE
Project Manager

Jeffrey S. Moore, MS, CHMM
Senior Project Manager

Reviewed by:

Mark D. Fisher, CHMM, LSRP
Principal

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1.0 INTRODUCTION

Pursuant to 40 CFR 761.61(a), The ELM Group, Inc. (ELM), on behalf of Troy Chemical Corporation, Inc. (Troy), is notifying the United States Environmental Protection Agency (USEPA) that Troy intends to conduct a self-implementing cleanup of polychlorinated biphenyls (PCBs) at its One Avenue L, Newark, Essex County, New Jersey facility (Figure 1). Specifically, the cleanup will consist of the removal of sediment/soil from an out-of-service, concrete-lined storm water drainage ditch (herein "the ditch" or "the lined ditch") which bisects the Troy property. This document serves as Troy's notification and certification, and presents a summary of the Site characterization and cleanup plan for the PCB remediation wastes at the Site. Please note that the proposed remediation outlined in this Cleanup Plan applies only to the approximately 550 foot extent of the concrete-lined ditch which bisects the Troy property. Unlined drainage ditches are located along Troy's eastern property boundary as well as immediately south of the property (to which the concrete-lined ditch formerly discharged); however, the remediation of these ditches are not included in the scope of work outlined herein.

PCBs (amongst other contaminants) were detected in sediment/soil inside the ditch at concentrations greater than 50 mg/kg during the 2008 Remedial Investigation (RI) conducted pursuant to the New Jersey Department of Environmental Protection (NJDEP) Site Remediation Program (SRP). As part of an overall remediation strategy, Troy intends to remove all sediment/soil inside the ditch (including that sediment/soil with PCB concentrations less than 50 mg/kg), backfill the ditch with NJDEP-certified clean fill, and install a concrete cap over the backfilled area. The ditch walls and bottom will remain in place as they provide structural support to buildings and other features abutting the ditch.

Following completion of the remediation efforts described herein, Troy will continue to use the property as an industrial (i.e., chemical manufacturing) facility. The area to be remediated is located in an exterior portion of the property bisecting the main manufacturing area of the plant. Following backfilling and paving of the ditch area, Troy

intends to use the area for transient support functions, such as product storage. Troy does not intend to erect any permanent structures in the remediated area.

Because of the nature of the intended reuse of the remediated area, it is unlikely that any individual will occupy this area for more than 6.7 hours per week. Nevertheless, to allow for a more flexible reuse, this Cleanup Plan assumes individual occupancy of an average of 16.7 hours or more per week (high occupancy). After all sediment/soil is removed from the ditch, a concrete cap will be placed over the entire remediated area, and will meet the criteria for a cap as specified in 40 CFR 761.61.

2.0 SITE DESCRIPTION AND PHYSICAL SETTING

The following sections include a general physical description of the ditch as well as a discussion of the historic development and hydrogeology of the ditch. For completeness, a general discussion of the Troy property and its physical setting, as it pertains to the ditch, is also provided below. A comprehensive discussion of the Troy property is not included herein as this Cleanup Plan specifically addresses the lined ditch. A comprehensive discussion of the physical setting of the Troy property was provided in previous submissions to the NJDEP (ELM, 2010) and can be made available for review upon request.

2.1. General Description and Physical Setting of the Troy Property

Troy operates an active manufacturing facility situated on approximately 5.8 acres located at One Avenue L in Newark, Essex County, New Jersey (i.e., the Site) (Figure 1). With the exception of limited landscaped and grassed areas (located remote to the ditch), the property is entirely covered by surface caps consisting of buildings, concrete, and asphalt (Figure 2). The property is located in the Ironbound District of Newark; a highly industrialized section of the city which was developed prior to 1900 by the emplacement of historic industrial fill over former salt marshes. The Troy property is bounded to the west by Avenue L and industrial/commercial properties; to the north by a Federal Express Distribution Center; and to the east and south by commercial/industrial properties including Continental Hardware and Trading (hardware retailer), Welch, Holme & Clark

Company, Inc. (distributor of crude & refined vegetable oils), and Globe Metals (scrap metal recycler) (Figure 2).

Two ephemeral storm water ditches (both oriented north to south) are present at the property (Figure 2): (1) a concrete and gabion-lined ditch which bisects the center of Troy's operational area (the focus of this Cleanup Plan); and (2) an unlined ditch which runs along Troy's eastern property boundary. Remediation of the unlined ditch is not included as part of this cleanup plan. The lined ditch originates at Troy's northern property boundary and terminates at the southern property boundary. Immediately downstream of the Troy property, the lined ditch and unlined ditch converge within an underground concrete box culvert, which discharges to an unlined channel on the Continental property to the south.

The Troy property is underlain by several unconsolidated strata (ELM, 2004). The uppermost is a heterogeneous assemblage of historic industrial fill material consisting of sand and silt with varying amounts of gravel, brick, concrete, and cinders. The fill layer extends across the entirety of the Troy property and generally extends to a depth of 5-7 feet below grade. Immediately underlying the fill layer is a low-permeability layer of organic-rich marsh deposits composed of peat and silts which is typically 1- 1½ feet thick. A low-permeability glacial till, consisting of clay with lesser amounts of silt and trace sand and gravel, immediately underlies the peat layer. The glacial till layer is generally encountered beginning at 8-9 feet below grade at the Troy Site. The glacial till encompasses the entire Troy property and has thickness exceeding 100 feet in the vicinity of the Site (ELM, 2004). Based on borings and surveying completed at the Troy property, the glacial till layer immediately underlies/envelopes the bottom of the lined ditch.

Groundwater occurs in two principal water bearing units at the Troy property: the shallow water bearing unit within the historic fill and peat layers, and the deeper water bearing unit within the low-permeability glacial till material. On a micro-scale, groundwater flow within the shallow water bearing unit is highly variable, due to the presence of the two

ditches at the Site (See Section 2.4, below). However, regionally, both groundwater and surface water flow south-southeast towards Port Newark Channel/Newark Bay.

There are no residences, schools, hospitals, or parks within a 1,000-foot radius of the Troy property, and about 70 percent of the land surface within this area is covered by structures or other surface caps (asphalt or concrete) (EMCON, 1998; ELM, 2004). Due to its industrial history and development with historic industrial fill, soil, groundwater, and surface water within the Ironbound District of Newark have been contaminated by numerous anthropogenic sources. Regional contamination of groundwater in the Ironbound is well documented and includes elevated levels of petroleum hydrocarbons, aromatic and chlorinated hydrocarbons, PAHs and heavy metals (2B, 1997). Similarly, soil, and surface water in the Ironbound have been documented to contain significantly elevated levels of petroleum hydrocarbons, PAHs and heavy metals (particularly lead and arsenic), primarily due to the ubiquitous presence of historic industrial fill in the area.

2.2. Physical Description of the Concrete-Lined Ditch

The ditch to be remediated is a completely channelized, fortified (with concrete and gabion walls) channel which was formerly utilized for storm water conveyance for the Ironbound (Figure 3). There are currently no storm water inputs to the channel from Troy or surrounding properties with the exception of precipitation directly falling into the channel. The length of the lined ditch is approximately 550 ft, spanning the entire north-south extent of the Troy property, and bisecting the main operational area of the plant. The width of the ditch varies across its length but, in general, is approximately 18 ft at the upstream (northern) end, tapering down to approximately 6 ft at the downstream (southern) end. The areal extent of the ditch is approximately 5,700 square feet. The ditch is constructed with a combination of concrete and stone gabion walls. Gabion comprises approximately 30% of the 1,000 ft of ditch wall and is present at both the northern (both sides) and southern (east side only) extents of the ditch (Figures 2 and 3). The remainder of the ditch walls is constructed of concrete. The height of the concrete/gabion walls relative to the base of the ditch vary significantly along the length of the ditch ranging from

approximately 6 to 15 ft. Top of soil/sediment within the ditch is generally 3-4 feet below grade, except in the northern portion of the ditch where it is approximately 10 feet below grade. The top of the concrete walls are generally two to three feet above surrounding grade, while the top of gabion walls are generally half a foot above surrounding grade. A concrete slab forms the bottom of the ditch.

The ditch liner was constructed at various times spanning from circa 1950 to 1980. The ditch was lined using variable construction methods over this span to facilitate storm water drainage and to provide support to structures being constructed proximate to its sides. In some instances, building foundations are integral to (a part of) the ditch liner. The concrete walls and bottom of the ditch in the central, operational portion of the property is constructed of thick (generally greater than eight inches) concrete and was built before 1953 when Troy's predecessor took ownership of the property. The extreme north and south ends of the ditch were subsequently lined with stone gabion by Troy. The ditch bottom in these areas is reported to be solid; however, no information is available regarding the material of construction.

The material located within the ditch is a combination of soil and sediment and is a heterogeneous, highly organic assemblage of sand and silt with interspersed fill material, refuse, and vegetative matter. Overall sediment/soil thickness within the ditch ranges from a maximum of 3.5 feet at the northern end, tapering down to approximately 2.5 feet at the southern end. From surface to approximately 6 inches below top of sediment/soil (BTS), the material is similar to a course to fine grained soil with interspersed vegetation and root matter. Below the surface sediment/soil and extending to the bottom of the ditch is a layer of fine sand and silt.

2.3. Historical Development and Use of the Concrete-Lined Ditch

The concrete-lined ditch (as well as the downstream, unlined storm water channel) had previously been used for over 100 years as an urban storm water drainage structure for Newark's Ironbound District. The ditch was originally constructed as an unlined ditch

sometime prior to 1892, and served as a drainage feature to facilitate the development of the Ironbound District. As the Ironbound developed, the ditch became the receiving body for storm water runoff from approximately 750 acres of industrial properties to the north of Troy through the Wilson Avenue storm sewer system. As a result, sediment/soil along the entire length of the ditch (including locations on and off the Troy property) has been significantly impacted by anthropogenic chemical sources as a result of both point and non-point source discharges (ELM, 2010).

The ditch previously originated at Wilson Avenue, on the adjacent northern property currently occupied by FedEx (Figure 4). As discussed above, this ditch served as the discharge point of the Wilson Avenue storm sewer system. In 2002, the City of Newark rerouted the Wilson Avenue storm water into a storm sewer installed along Avenue L. The Avenue L storm sewer discharges to the unlined storm water channel located on the Continental property via an underground box culvert located immediately south of the Troy property (Figure 4); bypassing the concrete-lined ditch on the Troy property. A NJDEP-approved remedial action previously conducted on the FedEx property to the north of Troy resulted in the backfilling of the ditch to surrounding Site grade, making the Troy property the origin of the ditch. As part of redevelopment in 2008, storm water catchments were installed at the FedEx facility routing all storm water runoff to the Avenue L storm sewer. In December 2008, Troy sealed the underground pipe that previously conveyed storm water from the unlined ditch on the FedEx property to the lined ditch on the Troy property, at the property boundary. As such, there are currently no storm water inputs to the ditch, other than storm water falling on the ditch during rain events.

2.4. Surface Water Conditions/Hydrogeology

As indicated above, there are currently no significant storm water inputs to the lined ditch, nor any process discharge. Storm water runoff at the Troy property is managed through a series of in-ground trenches which connect to the facility's on-site waste water treatment plant. Treated water is discharged to the Passaic Valley Sewerage Commission (a publicly

owned treatment works). Surface water is only present within the lined ditch during, and immediately following rain events; the result of storm water falling into the ditch. Under base flow conditions, surface water (if present) generally only exists as isolated pools within depressions in the sediment/soil surface, with no discernible flow.

Based on the results of previous investigations, some seepage of groundwater occurs to the lined ditch (Figure 4). This is supported by observations that, in general, sediment/soil becomes saturated approximately 6 inches to 1 ft BTS; coincident with groundwater elevations for the Site. Groundwater seepage is predicted to occur primarily in the gabion-lined sections of the ditch located at the northern and southern extents of the ditch. During the completion of a pilot stabilization test completed in April 2011, small breaches were observed in the eastern wall of the ditch, near the center of the Troy property (area of sampling transect PC-3 (Figure 2)). Based on these observations, groundwater seepage is likely occurring in the concrete-lined portions as well (Figure 4) in some locations. Nonetheless, given the low hydraulic gradient, moderate hydraulic conductivity, and small saturated thickness of the shallow water bearing unit, as well as the presence of low-permeability peat and/or glacial till layers enveloping the base of the ditch, the groundwater seepage rate is predicted to be nominal.

3.0 SITE CHARACTERIZATION

Sediment/soil within the lined ditch was characterized for PCBs during two field mobilizations completed by ELM, during which a total of 58 samples were analyzed. The first mobilization, completed in May 2008, consisted of the collection of samples at five transect locations within the ditch. Analytical results from these samples indicated a concentration of PCBs in excess of 50 mg/kg at three transects (Figure 5, Table 1). To delineate the areas of PCB-remediation waste, ELM collected additional samples in August/September 2011 at six additional transects within the ditch. A summary of the sampling methodology and discussion of the results is presented in Sections 3.1 and 3.2, respectively. A summary of analytical data for those samples analyzed for PCBs is provided on Figure 5 and Table 1.

3.1. Characterization Methodology

During the May 2008 event, samples were collected from five transects within the ditch (PC-1 through PC-5, Figure 5). Samples were collected by manually advancing two cores to the bottom of the ditch at each transect. One core was advanced between the centerline and the eastern wall of the ditch, and the second core was advanced between the centerline and the western wall of the ditch. In general, sediment/soil thickness ranged from 3.5 feet at transect PC-1 to 2.5 feet at transect PC-5. At each coring location, sediment/soil samples were collected at three unique depths: (1) the top six inches of sediment/soil (surface); (2) the six inch-interval immediately overlying the base (concrete slab) of the ditch; and (3) within the sediment/soil column, biased towards greatest field evidence of impact.

During the August/September 2011 field mobilization, ELM collected sediment/soil samples from 6 additional transects located 10 and 25 ft south of PC-1; 20 and 50 ft north and south of PC-3; and 10 and 25 ft north of PC-5 (Figure 5). Sampling methodologies were similar to those during the May 2008 event. At each of the six transects, two cores were advanced manually to the bottom of the ditch. One core was advanced between the centerline and the eastern wall of the ditch, and the second core was advanced between the centerline and the western wall of the ditch. Samples were collected at appropriate depths to delineate PCB detections above 50 mg/kg within each of the three original transects (PC-1, PC-3, and PC-5). Samples were collected from two discreet depths within each core, within the exception of those transects north of PC-5, in which samples were collected at three depths. Samples collected at 2011 transects closest to the original (2008) transects were released for analysis upon receipt at the laboratory. Samples collected from those 2011 transects farther from the original (2008) transects were held as contingent samples to be released if needed. The results of the sediment/soil characterization samples are summarized on Figure 5 and Table 1.

3.2. Summary of Characterization Results

Based on the collective data set, sediment/soil in the ditch is impacted with PCBs; however, delineation of PCB remediation waste areas has been achieved. The highest detection of

PCBs in sediment/soil is at depth near the southern boundary of Troy property (PC-5 – Figure 5) (ELM, 2010). However, concentrations of PCBs in samples collected at transects upstream of this area and adjacent to Troy operational areas show significantly lower concentrations – concentrations of PCBs lower than that detected at the most upstream sampling transect (PC-1). Out of 58 samples analyzed for PCBs, 49 samples contained PCB concentrations below 50 mg/kg. PCB concentrations ranged from non-detect (ND) to 144 mg/kg, with a mean concentration of 23.2 mg/kg.

In summary, the results of the characterization sampling indicate that sediment/soil with PCB concentrations exceeding 50 mg/kg are limited to three discrete areas of the ditch (Figure 5): (1) Area 1 located in the extreme northern portion of the ditch ending from the northern property boundary to transect PC-1-10S (approximately 15 linear ft); (2) Area 2 located in the central portion of the ditch extending from transect PC-3-20N south to PC-4 (approximately 190 linear feet); and (3) Area 3 located in the southern portion of the ditch extending from transect PC-5-25N south to the southern property boundary (approximately 50 linear feet).

4.0 SELF IMPLEMENTING CLEANUP AND DISPOSAL OF PCB REMEDIATION WASTE

The lined ditch on the Troy property is being remediated under the NJDEP SRP. The sediment/soil within the ditch contains as-found concentrations of PCBs (amongst other contaminants) in excess of 50 mg/kg - greater than the applicable cleanup objectives. Therefore, remediation of the lined ditch will be completed in accordance with the requirements of 40 CFR 761.61.

4.1. General Remediation Approach

The general remedial approach for the lined ditch is the excavation and off-site disposal of PCB impacted sediment/soil, backfill of the ditch with certified clean fill, installation of a concrete cap, and execution of a deed notice for the Site. This section summarizes the general and logistical approach that will be implemented for the completion of the remedial action.

4.1.1. Delineation Sampling

In-situ PCB delineation sampling was conducted prior to development of this Cleanup Plan, and is summarized in Section 3. Delineation of the areas with PCB concentrations in excess of 50 mg/kg is complete. Therefore, no additional characterization sampling is proposed as part of remediation of the ditch.

4.1.2. Sealing of Downstream Ditch Box Culvert

Prior to the initiation of any invasive work within the ditch, the approximately 6 foot opening to the box culvert located immediately south of the Troy property will be sealed (Figure 3). The sealing of the culvert will prevent off-site migration of water and sediment/soil from the work area during remedial activities. Please note that this is the only portion of the ditch currently which is not walled in by concrete or gabion walls. The seal will be designed by a licensed New Jersey Professional Engineer such that it will be a permanent structure to remain in place after the completion of the remediation.

4.1.3. In-Situ Stabilization

As discussed previously, the majority of sediment/soil within the ditch is water-saturated. To facilitate its removal and amend it for proper transportation, sediment/soil will be stabilized in place within the ditch. The *in-situ* stabilization will also serve as a method of minimizing waste water generation during remediation. Stabilization will be accomplished through mixing of sediment/soil with cement kiln dust (CKD). CKD will be added to and mixed with the sediment/soil using excavators beginning at the northern and southern extents of the ditch. After the stabilized sediment/soil in these areas has cured, a small excavator will be placed into the ditch to stabilize the next section. This process will continue, progressing to the north and south until all sediment/soil has been stabilized. The stabilization will be completed in a manner to ensure that areas of PCB concentrations in excess of 50 mg/kg (Figure 5) remain segregated from the remaining sediment/soil within the ditch.

The percentage of CKD added is expected to vary somewhat along the length of the ditch based on varying conditions; however, based on the results of a treatability study/pilot test completed by Troy/ELM, it is anticipated that an approximate ratio of 30% by weight of CKD will be required.

4.1.4. Excavation, Staging, and Off-Site Disposal

Following curing, stabilized sediment/soil will be removed from the ditch by excavators located in the equipment accessible areas along the northern, central, and southern portions of the ditch (Figure 2). The excavation will extend horizontally and vertically until the ditch walls and bottom are encountered (i.e., complete removal of soil/sediment). All sediment/soil adjacent to/atop the liners will be removed; however, removal of the liners themselves is not practicable as the sidewall liners of the ditch serve to provide structural support for the foundations of adjacent buildings, or (in some cases) the walls are integral to the foundation of adjacent buildings (See Section 2.2). If areas are encountered in which no concrete bottom exists, the excavation will be extended into the underlying glacial till material to a depth at which no visual evidence of impact is observed (anticipated to be not more than 1 foot into the till given its extremely low permeability - measured hydraulic conductivity of $1.7x10^{-6}$).

Upon removal, stabilized sediment/soil will be immediately containerized in roll-off containers meeting the requirements of Department of Transportation Hazardous Materials Regulations (49 CFR Parts 171 through 180), pursuant to 40 CFR 761.65(c)(6). Sediment/soil removed from those areas of the ditch with PCB concentrations excess of 50 mg/kg will be segregated from sediment/soils excavated from outside these areas. Once full, the containers will be covered and staged in a paved area in the southeastern portion of the Site (Figure 2) to await transport to the appropriate disposal facility. All storage of PCB remediation waste will be consistent with the applicable requirements of 40 CFR 761.65. In addition, covered roll-offs will be marked with sign/labels in accordance with 40 CFR 761.45.

In preparation for off-site disposal, waste samples will be collected of the stabilized sediment to satisfy Resource Conservation and Recovery Act (RCRA) characterization requirements. As PCBs were pre-characterized/pre-delineated *in-situ* (at-found concentrations), no additional waste characterization samples for PCBs will be collected unless unanticipated conditions suggestive of higher concentrations or wider distribution of PCB remediation waste are found.

Following proper characterization, the stabilized sediment will be transported off site to appropriate disposal facilities. Sediment/soil excavated from those areas in which PCBs were detected at at-found concentrations exceeding 50 mg/kg will be disposed of at an approved chemical waste landfill pursuant to 40 CFR 761.75. Sediment excavated from those areas in which PCBs were detected at at-found concentrations less than 50 mg/kg will be disposed of at a licensed facility based on the results of the RCRA characterization samples and PCB concentrations. Troy will ensure that all transported wastes are properly received at the facility and will obtain and retain copies of the final disposal manifests. Pursuant to 761.25(c)(5), all waste characterization analysis and final disposal manifests will be maintained at the Site.

4.1.5. Post-Excavation Verification Sampling

Post-excavation verification sampling will be completed compliant with the requirements of 40 CFR 761 Subpart O. Both the concrete and the gabion material (basalt rock) comprising the ditch liner (sides and bottom) are considered porous material for the purposes of developing this sampling plan. Please note that the proposed program is extremely conservative (entails collection of over 300 subsamples) and will provide the necessary data distribution and density to thoroughly evaluate post-remedial conditions. A general overview of the post-excavation verification sampling program is provided on Figure 6. Due to the variable construction of the ditch walls, sample collection within the ditch has been subdivided into three segments:

- Segment 1 extends from the northern property boundary south approximately 145 feet. Both the eastern and western walls of the northernmost 75 feet of this segment are constructed of gabion. The eastern wall of the southernmost 70 feet of this segment is constructed of gabion, while the western wall is constructed of concrete. A concrete slab forms the base of the ditch in this segment.

- Segment 2 is located in the central portion of the property, beginning at the southern end of Segment 1 and extending south approximately 290 feet. Throughout this segment, the ditch walls (both eastern and western sides) are constructed of concrete. A concrete slab forms the base of the ditch in this segment.

- Segment 3 extends from the southern end of Segment 2 south to the property boundary (approximately 100 feet). The eastern ditch wall in this segment is constructed of gabion, while the western wall is constructed of concrete. A concrete slab forms the base of the ditch in this segment.

In summary, grab subsamples of the ditch liner (sides and bottom slab) will be collected across ditch transects (east to west) marked out every five feet down the length of the ditch (Figure 6). At each five foot transect, a minimum of three subsamples will be collected: one from the concrete base; and one each from the interior of both sidewalls. Wall samples (concrete or gabion) will strictly be collected from the bottom three feet of the wall (from base) as this represents the average height of sediment in contact with the walls (currently and historically). Subsamples of the concrete slab/base will be collected along the centerline of the base across the entire ditch and two additional concrete slab subsamples will be collected across the wider portion of the ditch (Segment 1) (Figure 6).

Concrete and gabion subsamples will be composited in accordance with 40 CFR 761.289(b)(1)(i), as depicted on Figure 6. Please note that concrete and gabion subsamples will not be composited within the same sample. Compositing will be

completed by homogenizing equal weights of concrete or gabion as described further below:

- ***Segment 1:*** In the northern-most portion of Segment 1 (ditch constructed with gabion liner on both sides and wider ditch width), three concrete base subsamples will be collected across each transect and composited every three transects (nine sample point composite). In addition, on each ditch wall, one gabion subsample will be collected at each transect and composited every six transects. All six gabion subsamples will be composited from the same wall (no composite mixing from east to west wall).

  In the southern-most portion of Segment 1 (area with gabion liner comprising only the eastern wall and narrower ditch width), two concrete base subsamples and one western wall subsample will be collected across each transect and composited every three transects (nine sample point composite). In addition, one gabion subsample will be collected at each transect from the eastern wall and composited every six transects.

- ***Segment 2:*** Within Segment 2 (ditch constructed with concrete walls and base) one concrete base subsample and two concrete wall subsamples (one per wall) will be collected across each transect and composited every three transects (nine sample point composite).

- ***Segment 3:*** Within Segment 3 (ditch constructed with a gabion liner along only the eastern wall, and narrow ditch width), one concrete base subsample and one concrete wall sample (western wall only) will be collected at each transect and composited every four transects (eight sample point composite). In addition, one gabion subsample will be collected at each transect from the eastern wall and composited every six transects.

Composite concrete and gabion samples will be submitted to a New Jersey certified laboratory for analysis of PCBs via method SW846-8082.

Should areas be encountered in which the concrete liner is absent or is significantly degraded, grab samples will be collected from the underlying glacial till material according to the gridding program described above, with separate composite samples prepared for soil.

If the results of the verification sampling indicate that PCBs remain above the 10 mg/kg cleanup goal, additional cleanup and remediation will be completed and post-excavation verification samples will be recollected in accordance with 40 CFR 761.283(b)(ii).

4.1.6. Backfilling of Ditch and Installation of Concrete Cap

Following confirmation that the PCB cleanup goals have been met, the ditch will be backfilled to surrounding grade. In preparation for backfilling, where applicable, the portions of the concrete ditch walls above surrounding surface grade (never in contact with sediment/soil) will be cut down to surrounding grade. Concrete generated during this activity will be containerized on site in roll off bins and will be characterized and disposed of off site consistent with the NJDEP Guidance for Characterization of Concrete and Clean Material Certification for Recycling (NJDEP, 2010), which includes sampling for PCBs. Backfill will conform to the requirements of NJDEP-certified clean structural fill (per N.J.A.C. 7:26E-6.4(b)2) (NJDEP, 2011).

Following the installation and compaction of the backfill, the former area of the ditch will be capped with reinforced concrete. The cap will be designed in coordination with Troy engineers such that storm water collected on the newly installed cap will be captured in the facility's existing storm water management system. The concrete cap will be a minimum of 6 inches thick and be designed to meet the requirements of 40 CRF 264.310(a) and 40 CFR 761.75(b)(1)(ii through v).

4.1.7. Deed Restriction

The NJDEP has previously approved the use of a deed restriction as a final remedy for soil contamination at the Site. The area of the former ditch will be incorporated into the site-

wide deed restriction in accordance with 40 CFR 761.61(a)(8). The format of the deed restriction will be in accordance with the NJDEP requirements and will be filed with Essex County.

4.2. Cleanup Levels Based on End Occupancy Use – High Occupancy Use with an Engineering Control

As discussed previously, the ditch is constructed with a combination of concrete and rock gabion walls and a concrete slab bottom (Figure 2). Given that the ditch walls and bottom vary along its length, it is expected that two different media will require post-remedial verification sampling:

(1) concrete and gabion walls and concrete bottom of the ditch (porous materials); and

(2) soil from the underlying glacial till (if concrete bottom is absent or degraded in portions of the ditch).

The cleanup levels for Site PCBs are based on the occupancy levels as defined by 40 CFR 761.61(a)(4)(i). Currently the area to be remediated is a drainage ditch with no human occupancy. Following the completion of remediation (including backfill and capping of the area), Troy intends to use the area for transient support functions, such as the exterior storage of raw materials or finished product. Troy does not intend to erect any permanent structures in the remediated area.

Because of the nature of the intended reuse of the remediated area, it is unlikely that any individual will occupy this area for more than 6.7 hours per week. Nevertheless, to allow for more flexibility in the reuse of this area, this Cleanup Plan assumes individual occupancy of an average of 16.7 hours or more per week, which constitutes high occupancy use. After all sediment/soil is removed from the ditch and the channel is backfilled, a reinforced concrete cap will be installed over the entire remediated area. The cap will meet the criteria specified in 40 CRF 264.310(a) and 40 CFR 761.75(b)(1)(ii through v).

Given the use of the cap and high occupancy scenario, the cleanup objective for the concrete and gabion walls and concrete bottom will be 10 mg/kg.

5.0 SCHEDULE

A schedule for the implementation of the proposed remediation is provided in Attachment 1.

6.0 NOTIFICATION AND OWNER CERTIFICATION

Submission of this Cleanup Plan serves as 30-day notification to the EPA Regional Administrator of the start of cleanup operations at the Troy Site. Concurring with this submission, this Cleanup Plan will also be submitted to the NJDEP and Essex County Health Department.

A copy of the Owner's Certification prepared in accordance with 40 CFR 761.61(a)(3)(i)(E) is included as Attachment 2 to this document.

7.0 SUMMARY OF PROPOSED REMEDIATION

Sampling for PCBs has been conducted in the concrete-lined ditch on the Troy Site as part of an ongoing investigation conducted under the auspices of the NJDEP SRP. Results of this investigation indicate that sediment/soil with total PCB concentrations exceeding unrestricted use standard (1 mg/kg) are present in the concrete-lined ditch at the Site. The selected remediation strategy for addressing the PCB contamination is the complete removal of all impacted sediment/soil. This self-implementing plan has been developed to provide details of that remediation including Site characterization data, a description of how the remedy will be implemented, and how cleanup verification sampling will be completed.

The proposed cleanup goals for the site have been developed based on the current and projected future land use for the Site and the area being remediated. Post-excavation verification sampling will confirm that removal activities have achieved the applicable

cleanup levels or additional cleanup and decontamination of gabion will be performed. In accordance with 40 CFR 761.61(a)(8), the remediated area will be incorporated in the NJDEP-approved deed restriction for the Site and the remediated area will be capped.

Based on the considerations above, Troy's proposed remediation activities are protective of human health and the environment. The remediation activities will reduce the PCB concentrations at the site to the required TSCA cleanup levels and will eliminate potential exposure pathways to the PCBs at the Site.

8.0 REFERENCES

2B, 1997. Petition to Reclassify Ground Water in the Ironbound Section of Newark. 2B Environmental, Inc. 1997.

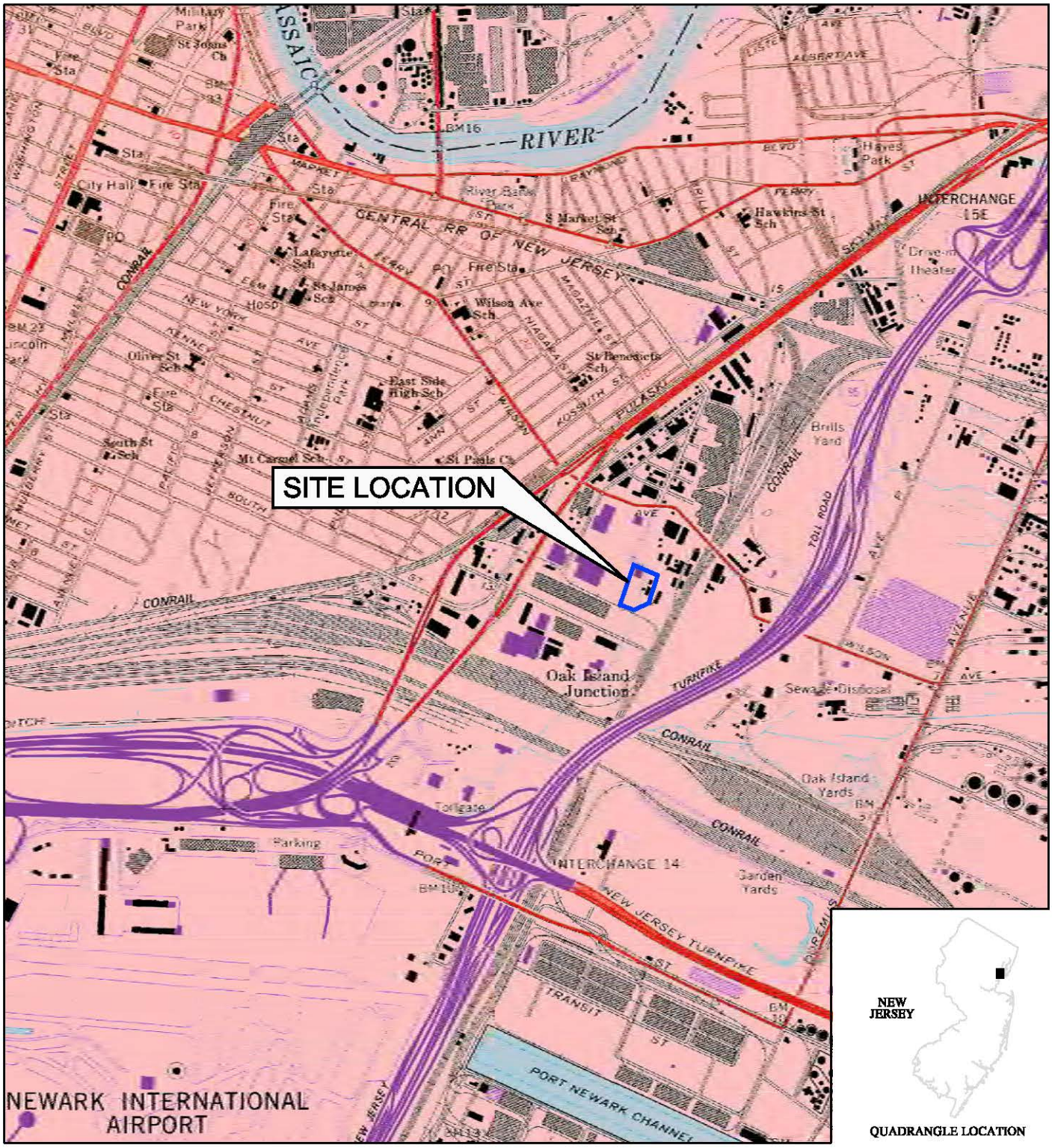
ELM, 2010. Remedial Investigation Report for Sediment and Surface Water. The ELM Group, Inc. July 21, 2010.

EMCON, 1998. Remedial Investigation Report, Troy Chemical Corporation, Inc. EMCON. February 1998.

NJDEP, 2010. Guidance for Characterization of Concrete and Clean Material Certification for Recycling. New Jersey Department of Environmental Protection. Updated January 12, 2010.

NJDEP, 2011. Technical Requirements for Site Remediation (N.J.A.C. 7:26E). New Jersey Department of Environmental Protection. Last Amended October 3, 2011.

FIGURES

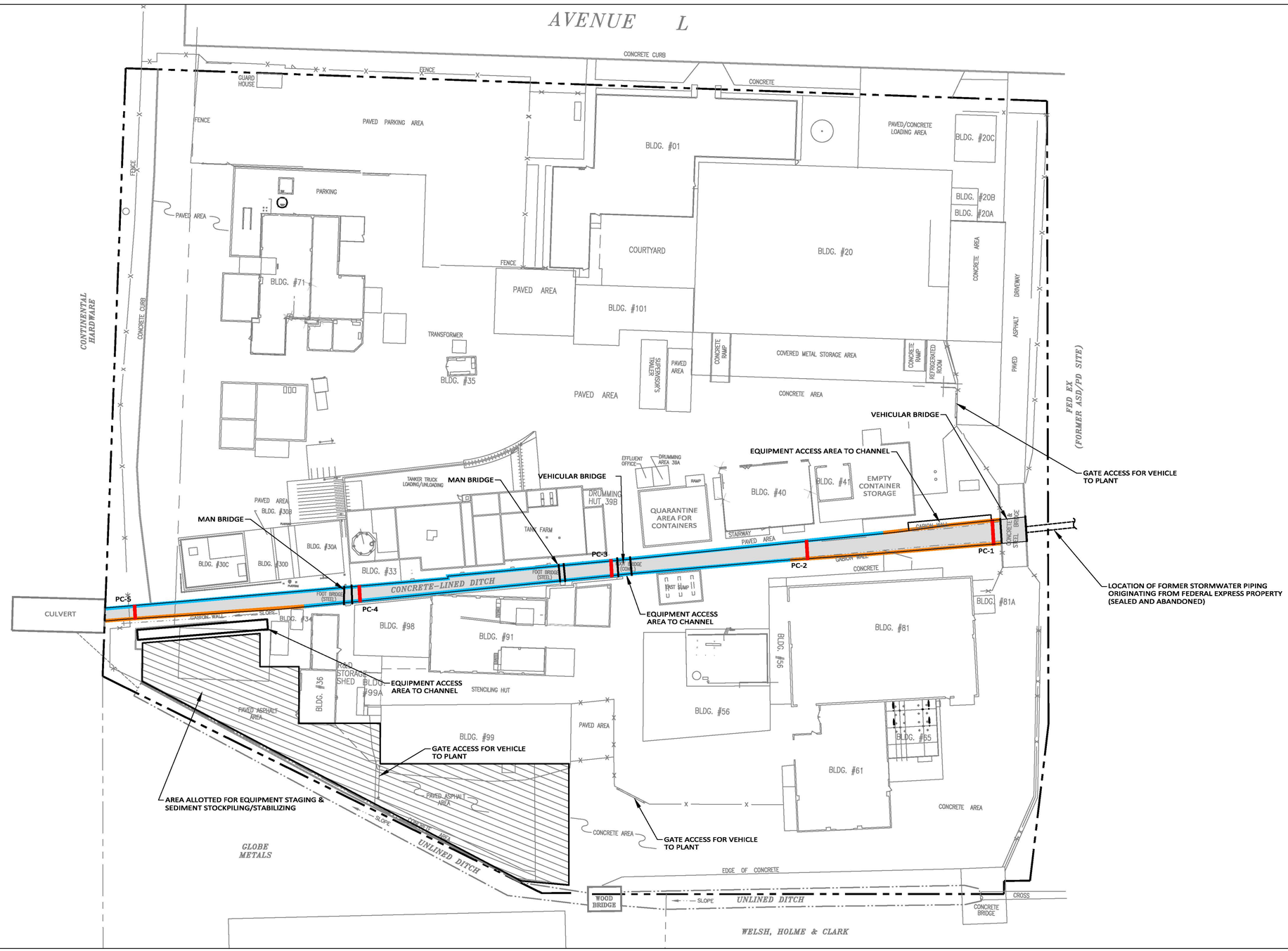


0 2000 4000

SCALE: Custom

THE ELM GROUP
218 WALL STREET, PRINCETON, NEW JERSEY 08540
4920 YORK ROAD, SUITE 290, HOLICONG, PENNSYLVANIA 18928 612
MAIN STREET, BOONTON, NEW JERSEY 07005
267 BROADWAY, FIFTH FLOOR, NEW YORK, NEW YORK 10007
2475 BAGLYOS CIRCLE, BETHLEHEM, PENNSYLVANIA 18020
www.ExploreELM.com

TITLE:	FIGURE 1 SITE LOCATION MAP
LOCATION:	TROY CHEMICAL CORPORATION ONE AVENUE L NEWARK, ESSEX COUNTY, NEW JERSEY
STATE PLANE COORDINATE (NAD 83):	N 684,225 E 589,105
DATE:	9/26/11
FILENAME:	95127_SITELOC
LAYOUT:	SITE_LOCATION
SOURCE:	USGS TOPO, ELIZABETH, NJ-NY, N.J. QUAD



LEGEND

- PROPERTY BOUNDARY (APPROXIMATE)
- FENCE
- CONCRETE WALL
- GABION WALL
- AREA OF SEDIMENT REMOVAL/DISPOSAL
- AREA ALLOTTED FOR EQUIPMENT STAGING/STORAGE AND STAGING OF CONTAINERIZED SEDIMENT
- PC-2 SAMPLING TRANSECT LOCATION AND ID
- BRIDGES SPANNING LINED DITCH

SOURCE:
1. "FACILITY SITE PLAN", PROVIDED BY TROY CHEMICAL COMPANY, INC., DATED 4/15/97, LAST REVISED 5/10/02, DRAWING NO. 0521.

0 30 60
SCALE: 1" = 30'

TITLE:
FIGURE 2
GENERAL SITE MAP SHOWING CONSTRUCTION DETAILS FOR THE LINED DITCH, LIMITS OF SEDIMENT REMOVAL, AND OTHER DETAILS

LOCATION: TROY CHEMICAL CORPORATION, INC. ONE AVENUE L NEWARK, NEW JERSEY

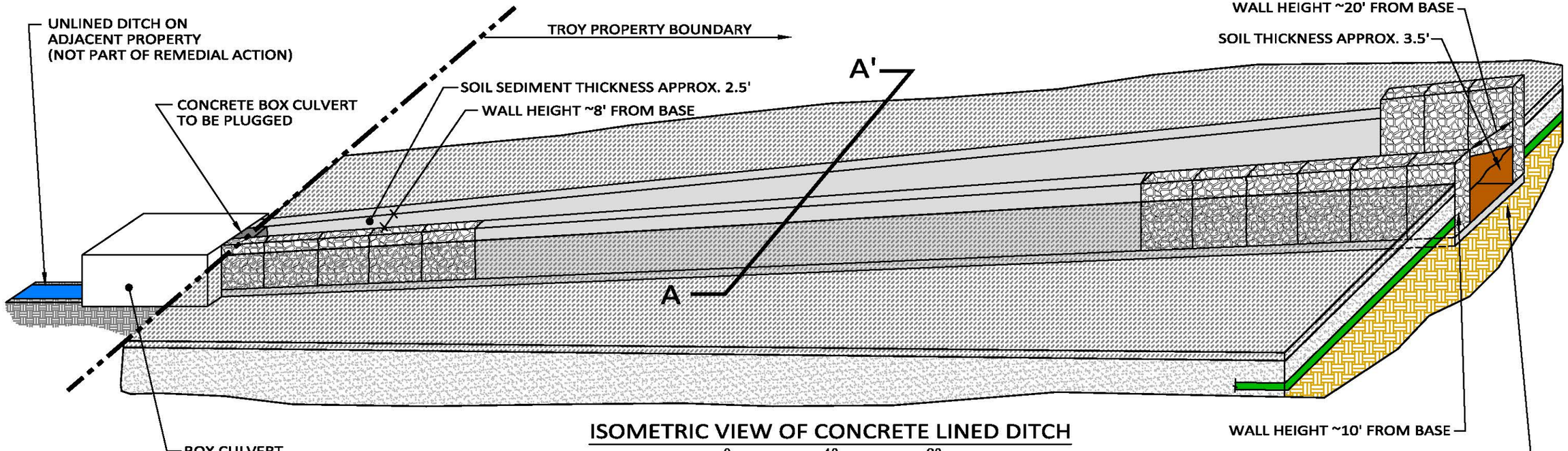
DATE: 2/24/12

FILENAME: 95127_SAMPLES-REV1

LAYOUT: CON_DET_D

THE ELM GROUP
216 WALL STREET, PRINCETON, NEW JERSEY 08540
4920 YORK ROAD, SUITE 290, HOLICONG, PENNSYLVANIA 18928
612 MAIN STREET, BOONTON, NEW JERSEY 07005
267 BROADWAY, FIFTH FLOOR, NEW YORK, NEW YORK 10007
2475 HAGLYOS CIRCLE, BETHLEHEM, PENNSYLVANIA 18020
www.ExploreELM.com

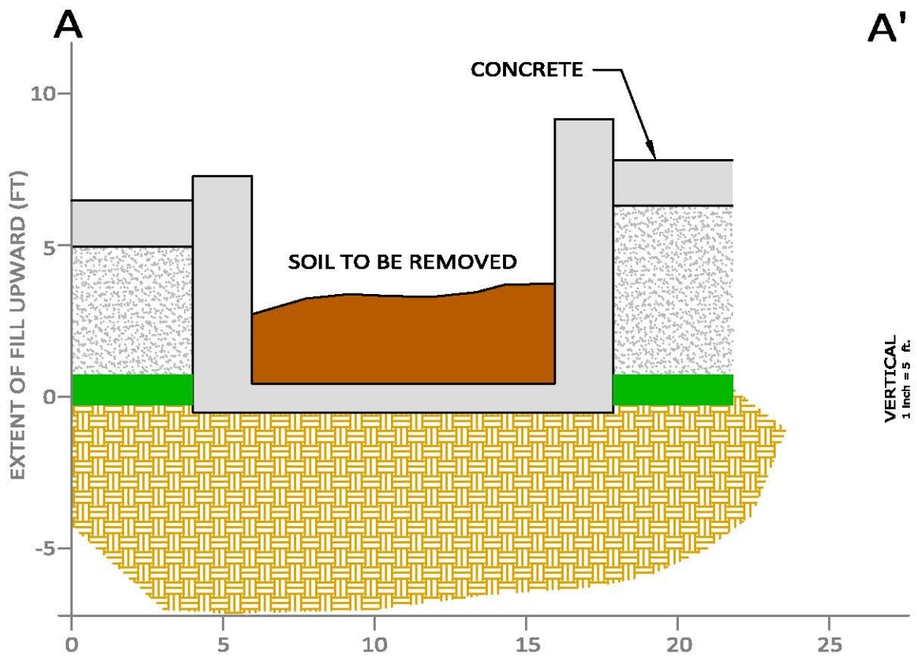
G:\95127\Troy\CAD\95127_SAMPLES-REV1.dwg, CON_DET_D, 2/1/2012 8:35:58 AM, bruce



ISOMETRIC VIEW OF CONCRETE LINED DITCH

0 40 80

APPROX. SCALE: 1" = 40'



PC-3 CROSS-SECTION A-A'

LEGEND

- GABION WALL
- CONCRETE WALL
- PEAT (FORMER MEADOW MAT)
- HISTORIC INDUSTRIAL FILL (EMPLACED CIRCA 1900) GRAVEL, AND CONCRETE)
- GLACIAL TILL LAYER
- ASPHALT OR CONCRETE COVER

TITLE: FIGURE 3

ISOMETRIC VIEW OF GENERALIZED CONSTRUCTION OF CONCRETE LINED DITCH AND SURROUNDING STRATIGRAPHY SUBSURFACE

LOCATION: TROY CHEMICAL CORPORATION, INC.
ONE AVENUE L
NEWARK, NEW JERSEY

DATE: 2/27/12

FILENAME: 95127_ISO_SECTION

LAYOUT: ISO_SEC

THE ELM GROUP
218 WALL STREET, PRINCETON, NEW JERSEY 08540
4920 YORK ROAD, SUITE 290, HOLICONG, PENNSYLVANIA 18928 612
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AVENUE L

AVENUE L STORM SEWER (REPLACED FORMER WILSON AVE SEWER IN 2008/09)

TROY CHEMICAL CORPORATION

WWTP MANAGEMENT OF ALL SITE STORM WATER - DISCHARGE TO PUBLIC SEWER)

APPROXIMATE LOCATION OF STORM WATER COLLECTION ON FEDEX PROPERTY (DEC. 2008)

BOX CULVERT (CITY OF NEWARK 2007)

FORMER STORM WATER DISCHARGE POINT FROM FEDEX (SEALED DEC. 2008)

TROY CHEMICAL CORPORATION

FORMER EXTENT OF DITCH (FILLED IN AS PART OF NJDEP APPROVED RA)

UNDERGROUND PIPE CONNECTING UNLINED DITCH TO CULVERT

FORMER DISCHARGE POINT FROM WILSON AVENUE STORM WATER NETWORK

CONTINENTAL HARDWARE (FORMER RED STAR)

FEDERAL EXPRESS (FORMER ALBERT STEEL DRUM/PRENTISS DRUG SITE)

LEGEND

- APPROXIMATE PROPERTY LINE FOR TROY CHEMICAL
- CURRENT EXTENT OF LINED DITCH
- APPROXIMATE LOCATION OF UNDERGROUND STORM WATER PIPING
- APPROXIMATE LOCATION OF CURRENT STORM SEWER LINES
- APPROXIMATE LOCATION OF FORMER WILSON AVENUE STORM SEWER LINE
- FORMER UPSTREAM EXTENT OF OPEN DITCH / STORM WATER SEWER
- CURRENT SURFACE WATER / STORM SEWER FLOW DIRECTION
- NOMINAL GROUND WATER TO STORM SEWER FLUX
- HISTORIC SURFACE WATER / STORM SEWER FLOW DIRECTION

NOTES:

1. LOCATIONS/EXTENT OF SECONDARY DRAINAGE DITCHES AND UNDERGROUND CONVEYANCE STRUCTURES (PIPING, CONDUITS, ETC.) ARE APPROXIMATE AND BASED ON SITE RECONNAISSANCE AND AERIAL PHOTOGRAPH REVIEW.

SOURCE:

1. "HYDRAULICS AND HYDROLOGY STUDY STREAM PLAN", PREPARED BY CIVIL ENGINEERING CORPORATION, DATED MARCH 1997, PROJECT NO. 97-048, DRAWING NOS. 4, 5 & 6 OF 11.
2. NEW JERSEY 2007-2008 HIGH RESOLUTION ORTHOPHOTOGRAPHY, NEW JERSEY OFFICE OF INFORMATION TECHNOLOGY, OFFICE OF GEOGRAPHIC INFORMATION SYSTEMS, TILES #K7A1-07, K6C13-07, J7B4-07 AND J6D16-07.
3. FIGURE ENTITLED "ANALYTICAL SAMPLING RESULTS ABOVE PROPOSED REMEDIATION GOALS" PREPARED BY L. ROBERT KIMBALL & ASSOC., INC., DATED 1/29/98, REVISED DATE 6/

0 100 200

SCALE: 1" = 100'

TITLE:

FIGURE 4

CURRENT AND HISTORIC FLOW PATTERNS ASSOCIATED WITH THE LINED DITCH

LOCATION:
TROY CHEMICAL CORPORATION, INC.
ONE AVENUE L
NEWARK, NEW JERSEY

DATE: 2/27/12

FILENAME: 95127-07_PIERSONS-DLUR_MTG

LAYOUT: PCB_PLAN (2)

The ELM Group
218 WALL STREET, PRINCETON, NEW JERSEY 08540
4920 YORK ROAD, SUITE 290, HOLICONG, PENNSYLVANIA 18928612
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267 BROADWAY, FIFTH FLOOR, NEW YORK, NEW YORK 10007
2475 BAGLYOS CIRCLE, BETHLEHEM, PENNSYLVANIA 18020
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PC-1	EAST			WEST		
SAMPLE DEPTH	0	2	3.5	0	2.5	3
TOTAL PCBs	3.9	12.4	0.15	14.2	**72**	**60**

PC-2	EAST			WEST		
SAMPLE DEPTH	0	2	3	0	2	4
TOTAL PCBs	16.1	1.05	ND	1.9	1.9	21

PC-3	EAST			WEST		
SAMPLE DEPTH	0	1	2.5	0	1	3.5
TOTAL PCBs	22.4	14.5	33	10.8	7.6	**68**

PC-5	EAST			WEST		
SAMPLE DEPTH	0	1	2.5	0	1.5	2
TOTAL PCBs	8.8	16.9	**57**	6.2	**60**	**144**

PC-3-50S	EAST		WEST	
SAMPLE DEPTH	2	3.5	2	3.5
TOTAL PCBs	18.6	6.2	5.8	**115**

PC-1-10S	EAST		WEST	
SAMPLE DEPTH	2	3	2	3
TOTAL PCBs	1.5	1.9	1.9	11.7

PC-3-20S	EAST		WEST	
SAMPLE DEPTH	2	3.5	2	3.5
TOTAL PCBs	4.1	**140**	4	11.8

PC-3-20N	EAST		WEST	
SAMPLE DEPTH	2	3.5	2	3.5
TOTAL PCBs	1.5	3.3	2.7	21.3

PC-4	EAST			WEST		
SAMPLE DEPTH	0	1.5	2	0	1.5	2
TOTAL PCBs	1.5	4.4	14.5	4	16.5	45

PC-5-25N	EAST			WEST		
SAMPLE DEPTH	1.5	2	2.5	1.5	2	2.5
TOTAL PCBs	5.9	17.9	6.2	26	19.9	33

PC-5-10N	EAST			WEST		
SAMPLE DEPTH	1.5	2	2.5	1.5	2	2.5
TOTAL PCBs	3.6	2.9	10.7	7.2	15.8	**53**

PC-5-10N
PC-5
PC-5-25N
PC-4
PC-3-50S
PC-3
PC-3-20S
PC-3-20N
PC-2
PC-1-10S
PC-1
CONCRETE-LINED DITCH
UNLINED DITCH
BOX CULVERT
TROY CHEMCIAL CORPORATION
BELL ATLANTIC 1-100 PR. 24 GA. CBL.
BELL ATLANTIC 1-600 PR. 26 GA. CBL.
OVERHEAD PIPE
TANK
PIPES
PIPE
PARKING AREA
PSE&G

LOCATION OF FORMER STORMWATER PIPING ORIGINATING FROM FEDERAL EXPRESS PROPERTY (SEALED AND ABANDONED)

LEGEND

- TROY PROPERTY LINE
- FENCE
- PC-1 — SAMPLING TRANSECT LOCATION AND ID
- AREA TO BE REMEDIATED
- <50 mg/kg PCB
- >50 mg/kg PCB

PC-1	EAST	TRANSECT LOCATION AND ID
SAMPLE DEPTH	0	SAMPLE DEPTH
TOTAL PCBs	3.9	TOTAL PCBs RESULT IN mg/Kg (SSG LEL/SEL = 0.07/53)
ND		NOT DETECTED

NOTES:

1. ALL RESULTS ARE IN mg/Kg.
2. **BOLD VALUE INDICATES PCB CONCENTRATION EXCEEDS 50 mg/Kg.**
3. LOCATIONS/EXTENT OF UNDERGROUND SURFACE WATER CONVEYANCE STRUCTURES (PIPING, CONDUITS, ETC.) ARE APPROXIMATE AND BASED ON SITE RECONNAISSANCE AND AERIAL PHOTOGRAPH REVIEW.

SOURCE:

1. "HYDRAULICS AND HYDROLOGY STUDY STREAM PLAN", PREPARED BY CIVIL ENGINEERING CORPORATION, DATED MARCH 1997, PROJECT NO. 97-048, DRAWING NOS. 4, 5 & 6 OF 11.

0 40 80

SCALE: 1" = 40'

TITLE:

FIGURE 5

TOTAL PCB DATA FOR LINED DITCH SHOWING AREAS WHERE CONCENTRATIONS EXCEED 50 mg/kg

LOCATION:
TROY CHEMICAL CORPORATION, INC.
ONE AVENUE L
NEWARK, NEW JERSEY

DATE: 2/24/12

FILENAME: 95127_SEDIMENT_RESULTS_REV2

LAYOUT: TSCA AREAS-B

THE ELM GROUP
218 WALL STREET, PRINCETON, NEW JERSEY 08540
4920 YORK ROAD, SUITE 290, HOLICONG, PENNSYLVANIA 18928 612
MAIN STREET, BOONTON, NEW JERSEY 07005
267 BROADWAY, FIFTH FLOOR, NEW YORK, NEW YORK 10007
2475 BAGLYOS CIRCLE, BETHLEHEM, PENNSYLVANIA 18020
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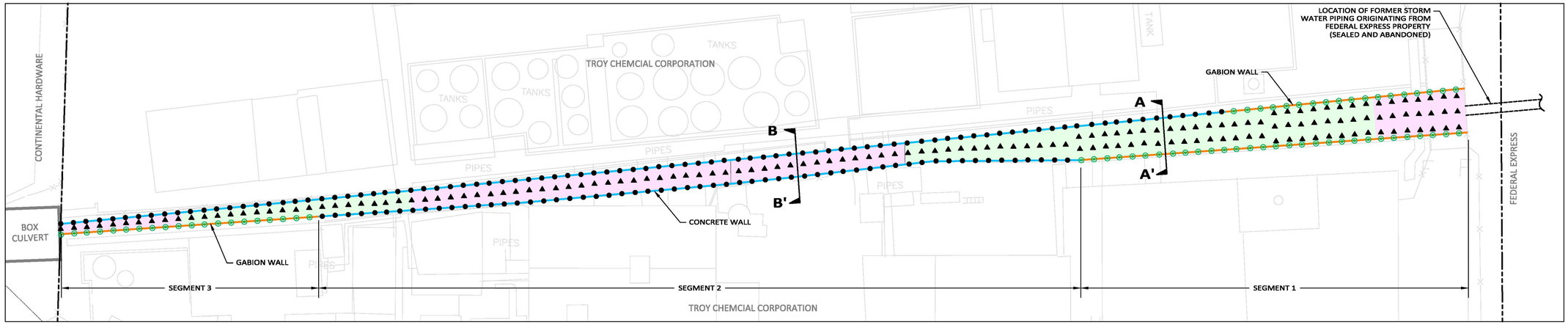
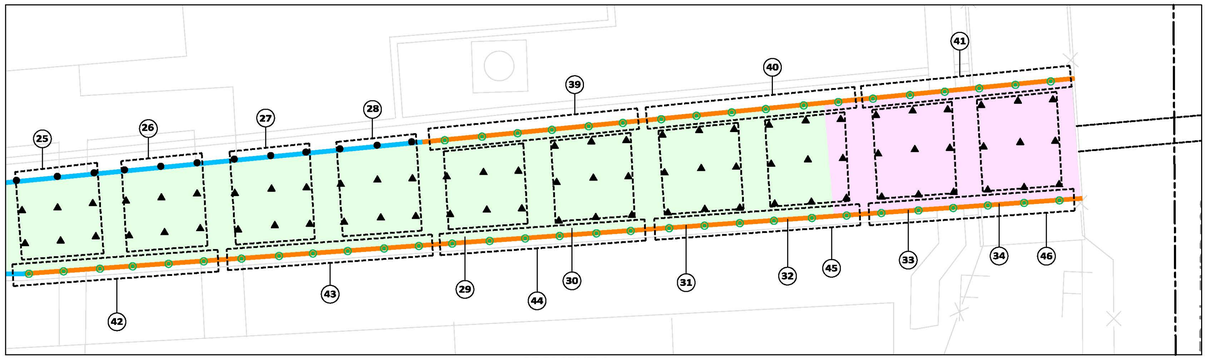
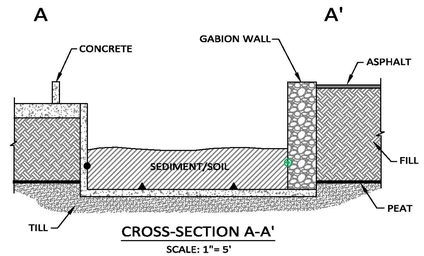


OVERALL SAMPLING MAP
SCALE: 1"=20'

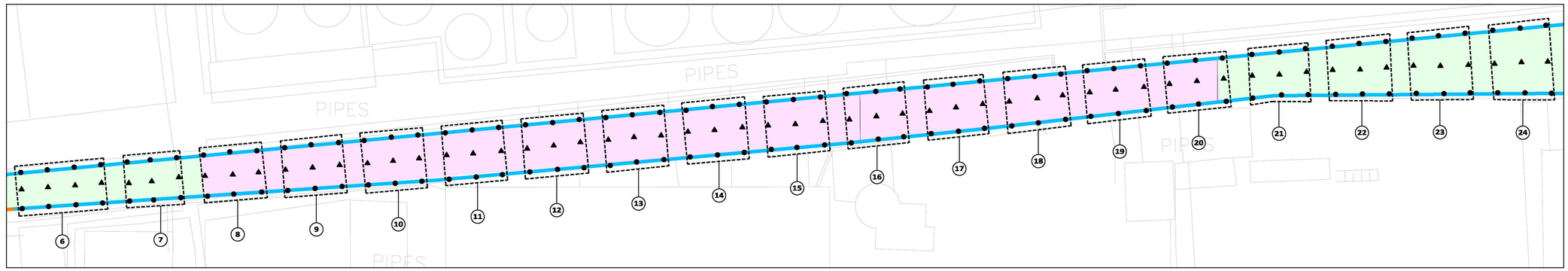
LEGEND
- TROY PROPERTY LINE
- FENCE
- <50 mg/kg PCB
- >50 mg/kg PCB
- CONCRETE WALL
- GABION WALL
- SIDEWALL CONCRETE SUBSAMPLE
- BOTTOM CONCRETE SUBSAMPLE
- SIDEWALL GABION SUBSAMPLE
- 34 — COMPOSITE SAMPLE AND ID



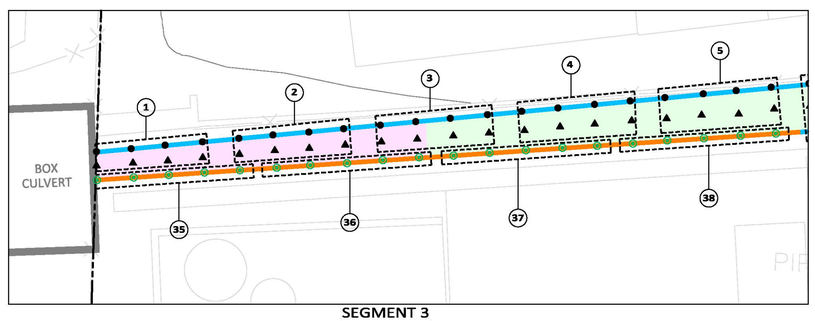
SEGMENT 1
SCALE: 1"= 10'



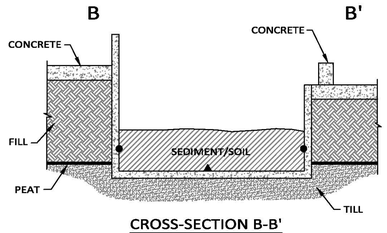
CROSS-SECTION A-A'
SCALE: 1"= 5'



SEGMENT 2
SCALE: 1"= 10'



SEGMENT 3
SCALE: 1"= 10'



CROSS-SECTION B-B'
SCALE: 1"= 5'

NOTES:

1. SIDEWALL SUBSAMPLES WILL BE COLLECTED FROM THE INTERIOR OF THE DITCH WALLS AT THE DEPTH BELOW TO TOP OF REMOVED SEDIMENT.
2. GABION SUBSAMPLES WILL NOT BE COMPOSITED WITH CONCRETE SUBSAMPLES.
3. IF AREAS ARE ENCOUNTERED HAVING NO CONCRETE BOTTOM, SOIL SAMPLES OF THE UNDERLYING GLACIAL TILL, SOIL SAMPLES WILL NOT BE COMPOSITED WITH CONCRETE OR GABION SAMPLES.

SOURCE:

1. "HYDRAULICS AND HYDROLOGY STUDY STREAM PLAN", PREPARED BY CIVIL ENGINEERING CORPORATION, DATED MARCH 1997, PROJECT NO. 97-048, DRAWING NOS. 4, 5 & 6 OF 11.

0 20 40
SCALE: 1" = 20'

TITLE: FIGURE 6
POST-EXCAVATION VERIFICATION SAMPLING PLAN

LOCATION: TROY CHEMICAL CORPORATION, INC.
ONE AVENUE L
NEWARK, NEW JERSEY

DATE: 2/27/12

FILENAME: 95127_TSCA SAMPLING

LAYOUT: TSCA SAMPLING (2)

THE elm GROUP
218 NASSAU STREET, PRINCETON, NEW JERSEY 08540
1925 YORK ROAD, SUITE 201, WOODBURY, PENNSYLVANIA 19038 412
MAIN STREET, HOUSTON, NEW JERSEY 07605
247 ONGLEWAY, FIFTH FLOOR, NEW YORK, NEW YORK 10007
2475 BALLTOSS CIRCLE, BETHLEHEM, PENNSYLVANIA 18020
www.theelmgrp.com

TABLES

Table 1: Summary of PCB Analytical Data

Table 1
Summary of PCB Analytical Data
Troy Chemical Corporation, Inc.
Newark, New Jersey

	Transect PC-1						Transect PC-1-10S				Transect PC-2					
	East			West			East		West		East			West		
Sample ID	PC-1-E_0.0	PC-1-E-2.0	PC-1-E_3.5	PC-1-W-0.0	PC-1-W_2.5	PC-1-W_3.0	PC-1-10S-E-2.0	PC-1-10S-E-3.0	PC-1-10S-W-2.0	PC-1-10S-W-3.0	PC-2-E-0.0	PC-2-E-2.0	PC-2-E-3.0	PC-2-W-0.0	PC-2-W-2.0	PC-2-W-4.0
Laboratory ID	921502	921501	921504	921506	921507	921508	AC61243-001	AC61243-002	AC61243-003	AC61243-004	921511	921514	921515	921516	921518	921519
Sample Media	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sample Collection Date	05/21/08	05/21/08	05/21/08	05/21/08	05/21/08	05/21/08	8/17/2011	8/17/2011	8/17/2011	8/17/2011	05/21/08	05/21/08	05/21/08	05/21/08	05/21/08	05/21/08
Sample Analysis Date	6/2/2008	6/5/2008	6/2/2008	6/5/2008	6/5/2008	6/5/2008	8/23/2011	8/23/2011	8/23/2011	8/24/2011	6/5/2008	6/2/2008	6/2/2008	6/2/2008	6/2/2008	6/5/2008
Sample Depth (feet)	0.0 - 0.5	2.0 - 2.5	3.5 - 4.0	0.0 - 0.5	2.5 - 3.0	3.0 - 3.5	2.0-2.5	3.0-3.5	2.0-2.5	3.0-3.5	0.0 - 0.5	2.0 - 2.5	3.0 - 3.5	0.0 - 0.5	2.0 - 2.5	4.0 - 4.5
% Moisture	52	52.6	33.1	24	33.2	25.1	52	56	44	45	57	26.5	19.8	46	51.7	32.9
Unit of Measure	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Polychlorinated Biphenyls (PCBs)																
Aroclor 1016	0.14 U	0.71 U	0.10 U	0.88 U	5.0 U	4.5 U	0.052 U	0.057 U	0.045 U	0.45 U	0.78 U	0.091 U	0.084 U	0.12 U	0.14 U	2.0 U
Aroclor 1221	0.14 U	0.71 U	0.10 U	0.88 U	5.0 U	4.5 U	0.052 U	0.057 U	0.045 U	0.45 U	0.78 U	0.091 U	0.084 U	0.12 U	0.14 U	2.0 U
Aroclor 1232	0.14 U	0.71 U	0.10 U	0.88 U	5.0 U	4.5 U	0.052 U	0.057 U	0.045 U	0.45 U	0.78 U	0.091 U	0.084 U	0.12 U	0.14 U	2.0 U
Aroclor 1242	0.14 U	0.71 U	0.10 U	0.88 U	56	47	0.31	0.57	0.53	3.5	0.78 U	0.091 U	0.084 U	0.12 U	0.14 U	18
Aroclor 1248	2.2	8.4	0.15	10	5.0 U	4.5 U	0.052 U	0.057 U	0.045 U	0.45 U	10	0.59	0.084 U	0.12 U	0.14 U	2.0 U
Aroclor 1254	0.14 U	0.71 U	0.10 U	0.88 U	5.0 U	4.5 U	0.052 U	1.3	1.4	8.2	0.78 U	0.091 U	0.084 U	1.9	1.9	2.0 U
Aroclor 1260	1.7	4.0	0.10 U	4.2	16	13	1.2	0.057 U	0.045 U	0.45 U	6.1	0.46	0.084 U	0.12 U	0.14 U	3.0
Aroclor 1262	0.14 U	0.71 U	0.10 U	0.88 U	5.0 U	4.5 U	0.052 U	0.057 U	0.045 U	0.45 U	0.78 U	0.091 U	0.084 U	0.12 U	0.14 U	2.0 U
Aroclor 1268	0.14 U	0.71 U	0.10 U	0.88 U	5.0 U	4.5 U	0.052 U	0.057 U	0.045 U	0.45 U	0.78 U	0.091 U	0.084 U	0.12 U	0.14 U	2.0 U
Total PCBs	3.9	12.4	0.15	14.2	**72**	**60**	1.5	1.9	1.9	11.7	16.1	1.05	0.084 U	1.9	1.9	21

	Transect PC-3-20N				Transect PC-3						Transect PC-3-20S			
	East		West		East			West			East		West	
Sample ID	PC-3-20N-E-2.0	PC-3-20N-E-3.5	PC-3-20N-W-2.0	PC-3-20N-W-3.5	PC-3-E-0.0	PC-3-E-1.0	PC-3-E-2.5	PC-3-W-0.0	PC-3-W-1.0	PC-3-W-3.5	PC-3-20S-E-2.0	PC-3-20S-E-3.5	PC-3-20S-W-2.0	PC-3-20S-W-3.5
Laboratory ID	AC61243-012	AC61243-011	AC61243-013	AC61243-014	921523	921525	921522	921527	921526	921529	AC61243-017	AC61243-018	AC61243-019	AC61243-020
Sample Media	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sample Collection Date	8/17/2011	8/17/2011	8/17/2011	8/17/2011	05/21/08	05/21/08	05/21/08	05/21/08	05/21/08	05/21/08	8/17/2011	8/17/2011	8/17/2011	8/17/2011
Sample Analysis Date	8/23/2011	8/23/2011	8/23/2011	8/25/2011	6/5/2008	6/5/2008	6/5/2008	6/5/2008	6/5/2008	6/9/2008	8/23/2011	8/24/2011	8/26/2011	8/24/2011
Sample Depth (feet)	2.0-2.5	3.5-4.0	2.0-2.5	3.5-4.0	0.0 - 0.5	1.0 - 1.5	2.5 - 3.0	0.0 - 0.5	1.0 - 1.5	3.5 - 4.0	2.0-2.5	3.5-4.0	2.0-2.5	3.5-4.0
% Moisture	50	35	53	40	57	40.7	39.5	42	49.9	41	44	40	44	39
Unit of Measure	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Polychlorinated Biphenyls (PCBs)														
Aroclor 1016	0.05 U	0.038 U	0.053 U	0.42 U	1.6 U	0.56 U	2.8 U	0.58 U	0.67 U	2.3 U	0.045 U	4.2 U	0.045 U	0.2 U
Aroclor 1221	0.05 U	0.038 U	0.053 U	0.42 U	1.6 U	0.56 U	2.8 U	0.58 U	0.67 U	2.3 U	0.045 U	4.2 U	0.045 U	0.2 U
Aroclor 1232	0.05 U	0.038 U	0.053 U	0.42 U	1.6 U	0.56 U	2.8 U	0.58 U	0.67 U	2.3 U	0.045 U	4.2 U	0.045 U	0.2 U
Aroclor 1242	0.57	2.2	1.6	13	16	8.1	33	0.58 U	0.67 U	32	2.6	110	2.7	9.2
Aroclor 1248	0.05 U	0.038 U	0.053 U	0.42 U	1.6 U	0.56 U	2.8 U	7.0	4.9	2.3 U	0.045 U	4.2 U	0.045 U	0.2 U
Aroclor 1254	0.05 U	0.038 U	0.053 U	0.42 U	1.6 U	0.56 U	2.8 U	0.58 U	0.67 U	2.3 U	0.045 U	4.2 U	0.045 U	0.2 U
Aroclor 1260	0.9	1.1	1.1	8.3	6.4	6.4	2.8 U	3.8	2.7	36	1.5	30	1.3	2.6
Aroclor 1262	0.05 U	0.038 U	0.053 U	0.42 U	1.6 U	0.56 U	2.8 U	0.58 U	0.67 U	2.3 U	0.045 U	4.2 U	0.045 U	0.2 U
Aroclor 1268	0.05 U	0.038 U	0.053 U	0.42 U	1.6 U	0.56 U	2.8 U	0.58 U	0.67 U	2.3 U	0.045 U	4.2 U	0.045 U	0.2 U
Total PCBs	1.5	3.3	2.7	21.3	22.4	14.5	33	10.8	7.6	**68**	4.1	140	4	11.8

Bold value indicates concentration exceeds PCB Remediation Waste threshold (50 mg/kg) per 40 CFR 70.61.

Notes:
NS = No Standard
U = Analyte not detected above indicated concentration

Table 1
Summary of PCB Analytical Data
Troy Chemical Corporation, Inc.
Newark, New Jersey

	Transect PC-3-50S				Transect PC-4						Transect PC-5-25N					
	East		West		East			West			East			West		
Sample ID	PC-3-50S-E-2.0	PC-3-50S-E-3.5	PC-3-50S-W-2.0	PC-3-50S-W-3.5	PC-4-E_0.0	PC-4-E_1.5	PC-4-E_2.0	PC-4-W_0.0	PC-4-W_1.5	PC-4-W_2.0	PC-5-25N-E-1.5	PC-5-25N-E-2.0	PC-5-25N-E-2.5	PC-5-25N-W-1.5	PC-5-25N-W-2.0	PC-5-25N-W-2.5
Laboratory ID	460-30592-1	460-30592-2	460-30592-3	460-30592-4	921070	921068	921062	921060	921059	921063	460-30592-5	460-30592-6	460-30592-7	460-30592-8	460-30592-9	460-30592-10
Sample Media	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sample Collection Date	9/2/2011	9/2/2011	9/2/2011	9/2/2011	5/20/08	5/20/08	5/20/08	5/20/08	5/20/08	5/20/08	9/2/2011	9/2/2011	9/2/2011	9/2/2011	9/2/2011	9/2/2011
Sample Analysis Date	9/8/2011	9/7/2011	9/7/2011	9/9/2011	5/31/2008	5/31/2008	5/31/2008	5/31/2008	5/21/2008	5/31/2008	9/7/2011	9/9/2011	9/7/2011	9/9/2011	9/9/2011	9/9/2011
Sample Depth (feet)	2.0-2.5	3.5-4.0	2.0-2.5	3.5-4.0	0.0 - 0.5	1.5 - 2.0	2.0 - 2.5	0.0 - 0.5	1.5 - 2.0	2.0 - 2.5	1.5-2.0	2.0-2.5	2.5-3.0	1.5-2.0	2.0-2.5	2.5-3.0
% Moisture	47.4	53.5	40.1	42.7	47	41.7	36.6	54	40.4	29.5	42.5	39.1	44.6	50.8	60.8	54.2
Unit of Measure	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Polychlorinated Biphenyls (PCBs)																
Aroclor 1016	0.64 U	0.14 U	0.11 U	2.3 U	0.13 U	0.23 U	1 U	0.14 U	1.1 U	0.95 U	0.12 U	0.55 U	0.12 U	0.68 U	0.34 U	0.73 U
Aroclor 1221	0.64 U	0.14 U	0.11 U	2.3 U	0.13 U	0.23 U	1 U	0.14 U	1.1 U	0.95 U	0.12 U	0.55 U	0.12 U	0.68 U	0.34 U	0.73 U
Aroclor 1232	0.64 U	0.14 U	0.11 U	2.3 U	0.13 U	0.23 U	1 U	0.14 U	1.1 U	0.95 U	0.12 U	0.55 U	0.12 U	0.68 U	0.34 U	0.73 U
Aroclor 1242	0.64 U	0.14 U	0.11 U	2.3 U	0.13 U	0.23 U	1 U	0.14 U	1.1 U	0.95 U	0.12 U	0.55 U	0.12 U	0.68 U	0.34 U	0.73 U
Aroclor 1248	9.2	2.5	2.2	46	0.13 U	0.23 U	1 U	0.14 U	1.1 U	15	2.1	6.8	2.2	10	6.7	15
Aroclor 1254	5.5	2	1.9	31	0.13 U	1.8	6.1	2	7.1	11	1.9	5.6	2.1	8.5	6.5	12
Aroclor 1260	3.9	1.7	1.7	38	1.5	2.6	8.4	2	9.4	19	1.9	5.5	1.9	7.5	6.7	11
Aroclor 1262	0.64 U	0.14 U	0.11 U	2.3 U	0.13 U	0.23 U	1 U	0.14 U	1.1 U	0.95 U	0.12 U	0.55 U	0.12 U	0.68 U	0.34 U	0.73 U
Aroclor 1268	0.64 U	0.14 U	0.11 U	2.3 U	0.13 U	0.23 U	1 U	0.14 U	1.1 U	0.95 U	0.12 U	0.55 U	0.12 U	0.68 U	0.34 U	0.73 U
Total PCBs	18.6	6.2	5.8	**115**	1.5	4.4	14.5	4	16.5	45	5.9	17.9	6.2	26	19.9	38

	Transect PC-5-10N						Transect PC-5					
	East			West			East			West		
Sample ID	PC-5-10N-E-1.5	PC-5-10N-E-2.0	PC-5-10N-E-2.5	PC-5-10N-W-1.5	PC-5-10N-W-2.0	PC-5-10N-W-2.5	PC-5-E_0.0	PC-5-E_1.0	PC-5-E_2.5	PC-5-W_0.0	PC-5-W_1.5	PC-5-W_2.0
Laboratory ID	AC61243-031	AC61243-033	AC61243-032	AC61243-034	AC61243-035	AC61243-036	921072	921074	921064	921065	921069	921067
Sample Media	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sample Collection Date	8/17/2011	8/17/2011	8/17/2011	8/17/2011	8/17/2011	8/17/2011	5/20/08	5/20/08	5/20/08	5/20/08	5/20/08	5/20/08
Sample Analysis Data	8/26/2011	8/24/2011	8/23/2011	8/24/2011	8/24/2011	8/24/2011	5/31/2008	5/31/2008	5/31/2008	5/22/2008	5/31/2008	5/31/2008
Sample Depth (feet)	1.5-2.0	2.0-2.5	2.5-3.0	1.5-2.0	2.0-2.5	2.5-3.0	0.0 - 0.5	1.0 - 1.5	2.5 - 3.0	0.0 - 0.5	1.5 - 2.0	2.0 - 2.5
% Moisture	37	44	56	40	53	51	45	35.1	39.8	53	31.1	41.8
Unit of Measure	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Polychlorinated Biphenyls (PCBs)												
Aroclor 1016	0.04 U	0.45 U	0.057 U	0.21 U	0.53 U	1 U	0.24 U	0.52 U	4.4 U	0.14 U	1.9 U	5.8 U
Aroclor 1221	0.04 U	0.45 U	0.057 U	0.21 U	0.53 U	1 U	0.24 U	0.52 U	4.4 U	0.14 U	1.9 U	5.8 U
Aroclor 1232	0.04 U	0.45 U	0.057 U	0.21 U	0.53 U	1 U	0.24 U	0.52 U	4.4 U	0.14 U	1.9 U	5.8 U
Aroclor 1242	1.6	3.8	0.62	2.4	4.8	12	0.24 U	0.52 U	4.4 U	0.14 U	1.9 U	5.8 U
Aroclor 1248	0.04 U	0.45 U	0.057 U	0.21 U	0.53 U	1 U	3.9	6.6	4.4 U	2.6	1.9 U	5.8 U
Aroclor 1254	0.04 U	0.45 U	0.057 U	0.21 U	0.53 U	1 U	2.1	4.7	4.4 U	1.6	22	44
Aroclor 1260	2	6.9	2.3	4.8	11	41	2.8	5.6	57	2	38	100
Aroclor 1262	0.04 U	0.45 U	0.057 U	0.21 U	0.53 U	1 U	0.24 U	0.52 U	4.4 U	0.14 U	1.9 U	5.8 U
Aroclor 1268	0.04 U	0.45 U	0.057 U	0.21 U	0.53 U	1 U	0.24 U	0.52 U	4.4 U	0.14 U	1.9 U	5.8 U
Total PCBs	3.6	10.7	2.9	7.2	15.8	53	8.8	16.9	57	6.2	60	**144**

Bold value indicates concentration exceeds PCB Remediation Waste threshold (50 mg/kg) per 40 CFR 70.61.

Notes:
NS = No Standard
U = Analyte not detected above indicated concentration

ATTACHMENTS

Attachment 1: Schedule of Implementation

Attachment 2: Self-Implementing Cleanup Owner's Certification Regarding Location of Records

ATTACHMENT 1:

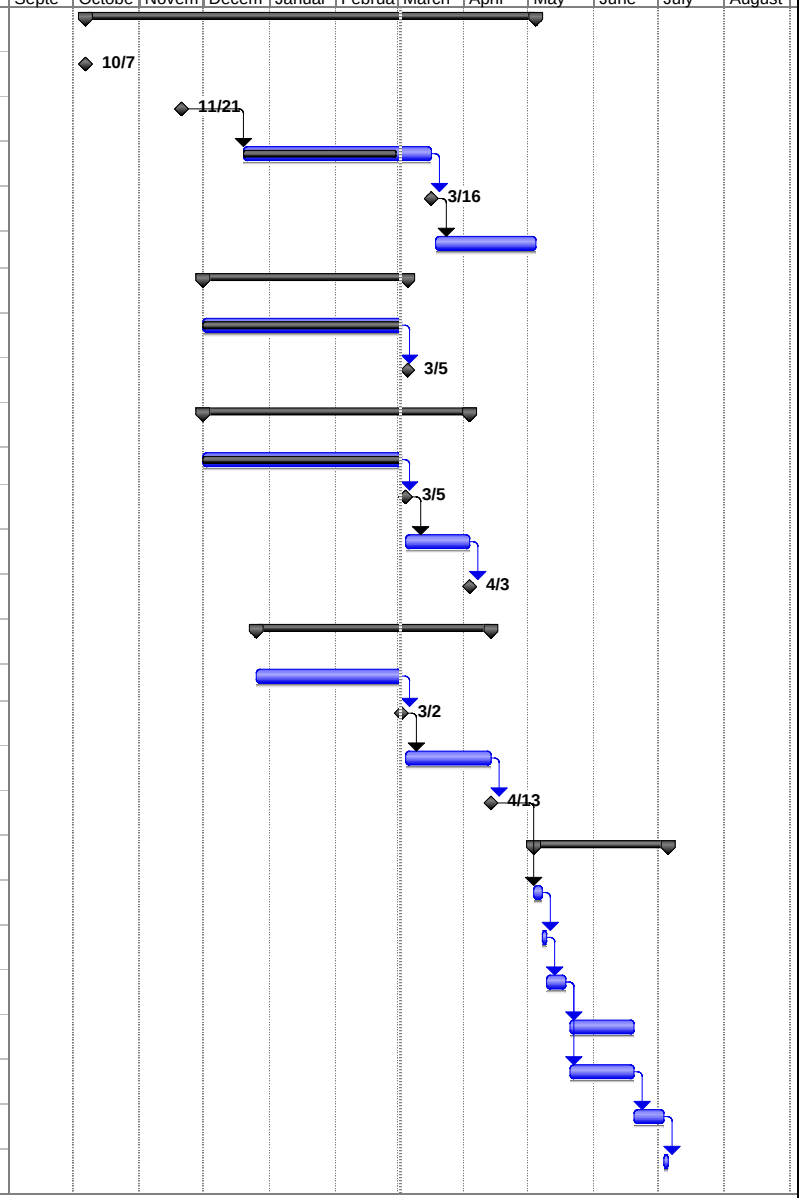
Schedule of Implementation

Remedial Action Schedule

Troy Chemical Corporation, Inc.

Newark, New Jersey

ID	Task Name	Duration	Start	Finish	Predecessors
1	**Bid Solicitation/Review & Contractor Selection/Coordination**	**151 days**	**Fri 10/7/11**	**Fri 5/4/12**	
2	Issue RFP for Remediation of Ditch	0 days	Fri 10/7/11	Fri 10/7/11	
3	Receive Contractor Bids	0 days	Mon 11/21/11	Mon 11/21/11	
4	Review of Contractor Bids	64 days	Tue 12/20/11	Fri 3/16/12	3
5	Contractor Selection	0 days	Fri 3/16/12	Fri 3/16/12	4
6	Contracting, Coordination, & Procurement of Municipal Permits	35 days	Mon 3/19/12	Fri 5/4/12	5
7	**Remedial Action Workplan**	**68 days**	**Thu 12/1/11**	**Mon 3/5/12**	
8	Preparation of RAW	67 days	Thu 12/1/11	Fri 3/2/12	
9	Submission of RAW to NJDEP	0 days	Mon 3/5/12	Mon 3/5/12	8
10	**TSCA Self-Implementing Cleanup Plan**	**89 days**	**Thu 12/1/11**	**Tue 4/3/12**	
11	Preparation of Self-Implementing PCB Cleanup Plan	67 days	Thu 12/1/11	Fri 3/2/12	
12	Submission of PCB Cleanup Plan to USEPA	0 days	Mon 3/5/12	Mon 3/5/12	11
13	USEPA Review of Cleanup Plan	22 days	Mon 3/5/12	Tue 4/3/12	12
14	USEPA Approval of Cleanup Plan	0 days	Tue 4/3/12	Tue 4/3/12	13
15	**DLUR Permitting**	**80 days**	**Mon 12/26/11**	**Fri 4/13/12**	
16	Preparation of DLUR GP4 and FHA Permit Applications	50 days	Mon 12/26/11	Fri 3/2/12	
17	Submission of GP4 and FHA Permit Applications	0 days	Fri 3/2/12	Fri 3/2/12	16
18	DLUR Review of Permit Applications	30 days	Mon 3/5/12	Fri 4/13/12	17
19	DLUR Approval of GP4 and FHA Permits	0 days	Fri 4/13/12	Fri 4/13/12	18
20	**Remedial Action Implementation**	**45 days**	**Fri 5/4/12**	**Thu 7/5/12**	
21	Contractor Mobilization and Site Preparation	2 days	Fri 5/4/12	Mon 5/7/12	19FS+14 days
22	Vegetation Clearing & Sealing of Ditch Culvert	2 days	Tue 5/8/12	Wed 5/9/12	21
23	In-Situ Stabilization of Sediment/Soil	7 days	Thu 5/10/12	Fri 5/18/12	22
24	Removal, Containerization, & Loadout of Sediment/Soil	22 days	Mon 5/21/12	Tue 6/19/12	23
25	Post-Excavation and PCB Verification Sampling	22 days	Mon 5/21/12	Tue 6/19/12	23
26	Backfilling of Ditch & Installation of Concrete Cap	10 days	Wed 6/20/12	Tue 7/3/12	25
27	Site Restoration and Demobilization	2 days	Wed 7/4/12	Thu 7/5/12	26



Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

ATTACHMENT 2:

Self-Implementing Cleanup Owner's Certification Regarding Location of Records

Self Implementing Cleanup

Owner's Certification Regarding Location of Records

In accordance with 40 CFR 761.61(a)(3)(E) this document serves as the Owner's Certification that all Sampling Plans, Sample Collection Procedures, Sample Preparation Procedures, Extraction Procedures and Instrumentation/Chemical analysis procedures used to assess or characterize the PCB contamination at the cleanup site are on file at the location identified below and are available for inspection by the USEPA.

Cleanup Site Name/Address: Troy Chemical Corporation, Inc.
One Avenue L, Newark, New Jersey 07105

Location of Records: The ELM Group, Inc.
218 Wall Street, Research Park, Princeton, New Jersey 08540

Signature: /Robert Okin/

Name: Robert Okin

Company Name: Troy Corporation

Attachment 2: Wetland Delineation Report, June 2014

WETLAND DELINEATION REPORT

PIERSON'S CREEK

NEWARK, ESSEX COUNTY, NEW JERSEY

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY

New York, NY

Prepared by:

WESTON SOLUTIONS, INC.

Edison, NJ

June 2014

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1 Introduction

Under the Region V Superfund Technical Assessment and Response Team III (START III) contract, U.S. Environmental Protection Agency (EPA) Region 2 tasked Weston Solutions, Inc. (WESTON®) with an investigation of the Pierson's Creek site located in Newark, Essex County, New Jersey. In October 2012, WESTON conducted a wetland assessment and delineation along the segment of Pierson's Creek located just south of Delancey Street. The reach evaluated is a tidally-influenced drainage channel located approximately 1 mile northeast of Newark Liberty International Airport. The project location is shown in Figure 1. The wetland assessment and delineation included only the immediate eastern bank of Pierson's Creek, as wetlands along its western bank could not be mapped due to accessibility and safety concerns.

This report includes a brief description of the wetlands identified, a table indicating the coordinates of each soil boring and flagged location, figures depicting various environmental features within and around the site and a map depicting the upland-wetland boundary along the creek bank, a photograph log with captions (Appendix A), copies of the field logbooks and wetland delineation data sheets (Appendix B), and the name and qualifications of the preparer (Appendix C).

2 Site Description

Pierson's Creek is predominantly a straightened tidal channel that flows south-southwesterly from just south of the Troy Chemical facility to the Port Newark Channel portion of Newark Bay. The northern portion of the approximately 1.5-mile-long creek consists primarily of open channel, while most of the southern portion flows within underground culverts beneath Interstate 78, Newark Liberty International Airport, and the New Jersey Turnpike. The wetland assessment and delineation was performed along the portion of the creek that crosses the vacant, former Engelhard property and the northernmost portion of Conrail's Oak Island rail yard. As shown in Figure 2, this section of Pierson's Creek is bordered mostly by a wooded area to the east and by a large vacant lot to the west.

The project location falls within New Jersey Department of Environmental Protection (NJDEP) Watershed Management Area No. 4. As delineated by Federal Emergency Management Agency (FEMA) and shown in Figure 3, the project area lies within the 100-year floodplain of the lower Passaic River and Newark Bay. Site topography varies and undulates as a result of historic filling. Pierson's Creek is deeply incised within this fill, and includes channel heights ranging from 8 to 10 feet. The tidal range is approximately 4 feet, which is consistent with the range observed at the Kill van Kull Tidal Station operated by National Oceanic and Atmospheric Administration (NOAA). Flow within Pierson's Creek appears to be restricted by trash and debris at culvert locations beneath Delancey Street and at the southern terminus of the project area. Flow restrictions appeared more severe during ebb tides when the trash and debris concentrate at the entranceways to culverts. There is a widening of the wetlands at the southern portion of the study area which may be caused by the temporary damming of flow by trash and debris during ebb tide, resulting in the creek overflowing its channel banks.

The region, like many developed areas within the Lower Passaic Watershed, formerly consisted of tidal wetlands associated with the Passaic River and Newark Bay. These areas were subject to a significant amount of industrialization and filling, and remaining waterways and wetlands have been affected by significant historical disturbance. As a result, the soils within the area are not a consistently reliable indicator upon which to determine the wetland boundary. Overstory and understory vegetation within the study area consisted of thickets of plant species common to Newark's disturbed area sites including tree of heaven (*Ailanthus altissima*), black cherry (*Prunus serotina*), winged sumac (*Rhus copallina*), and monotypic stands of phragmites (*Phragmites australis*) and bamboo (*Bamboo spp.*).

3 Identification of Wetlands in New Jersey

3.1 New Jersey Wetlands Program Overview

New Jersey has a comprehensive state-level program for freshwater and tidal wetlands administered pursuant to four statutes. It is one of two states nationally that have assumed the Section 404 program under the Clean Water Act. For wetlands under the NJ 404 Program, the 1989 Federal Manual for Identifying and Delineating Jurisdictional Wetlands (hereinafter, "the 1989 Manual") with subsequent amendments was adopted by statute. The 1989 Manual describes technical criteria, field indicators and other sources of information, and methods for identifying and delineating jurisdictional wetlands in the United States. The manual was the product of many years of experience in wetland identification and delineation by four Federal agencies: EPA, U.S. Army Corps of Engineers (USACE), U.S. Fish and Wildlife Service (FWS), and Soil Conservation Service (SCS). It is the culmination of efforts to merge existing field-tested wetland delineation manuals, methods, and procedures used by these agencies. The 1989 Manual draws heavily upon published manuals and methods, specifically USACE's Wetlands Delineation Manual, EPA's Wetland Identification and Delineation Manual, and SCS's Food Security Act Manual wetland determination procedure.

3.2 Wetlands Definition in New Jersey

"Freshwater wetlands" or "wetlands" means an area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions, commonly known as hydrophytic vegetation; provided, however, that NJDEP, in designating a wetland, shall use the three-parameter approach (i.e., hydrology, soils and vegetation) enumerated in the 1989 Manual as defined below. These include tidally influenced wetlands that have not been included on a promulgated map pursuant to the Wetlands Act of 1970, N.J.S.A. 13:9A-1 et seq.

3.3 Criteria Used to Identify Wetlands

3.3.1 Hydrophytic Vegetation Criteria

An area has hydrophytic vegetation when, under normal circumstances: (1) more than 50 percent of the composition of the dominant species from all strata are obligate wetland (OBL), facultative wetland (FACW), or facultative (FAC) species, or (2) a frequency analysis of all species within the community yields a prevalence index value of less than 3.0 (where OBL = 1.0, FACW = 2.0, FAC = 3.0, FACU = 4.0, and UPL = 5.0.

3.3.2 Hydric Soil Criteria

An area has hydric soils when the following National Technical Committee for Hydric Soils (NTCHS) criteria for hydric soils are met:

1. All Histosols except Folists; or
2. Soils in Aquic suborders, Aquic sub-groups, Albolls suborder, Salorthids great group, or Pell great groups of Vertisols that are:
    a. somewhat poorly drained and have water table less than 0.5 feet from the surface for a significant period (usually a week or more) during the growing season, or
    b. poorly drained or very poorly drained and have either:
        i. water table at less than 1.0 feet from the surface for a significant period (usually a week or more) during the growing season if permeability is equal to or greater than 6.0 inches/hour in all layers within 20 inches, or
        ii. water table at less than 1.5 feet from the surface for a significant period (usually a week or more) during the growing season if permeability is less than 6.0 inches/hour in any layer within 20 inches; or
3. Soils that are ponded for long duration or very long duration during the growing season; or
4. Soils that are frequently flooded for long duration or very long duration during the growing season.

3.3.3 Wetland Hydrology Criteria

An area has wetland hydrology when saturated to the surface or inundated at some point in time during an average rainfall year, as defined below:

1. Saturation to the surface normally occurs when soils in the following natural drainage classes meet the following conditions:
    a. In somewhat poorly drained mineral soils, the water table is less than 0.5 feet from the surface for usually one week or more during the growing season; or
    b. In low permeability (<6.0 inches/hour), poorly drained or very poorly drained mineral soils, the water table is less than 1.5 feet from the surface for usually one week or more during the growing season; or

c. In more permeable (≥6.0 inches/hour), poorly drained or very poorly drained mineral soils, the water table is less than 1.0 feet from the surface for usually one week or more during the growing season; or

d. In poorly drained or very poorly drained organic soils, the water table is usually at a depth where saturation to the surface occurs more than rarely. (Note: Organic soils that are cropped are often drained, yet the water table is closely managed to minimize oxidation of organic matter; these soils often retain their hydric characteristics and if so, meet the wetland hydrology criterion.)

2. An area is inundated at some time if ponded or frequently flooded with surface water for one week or more during the growing season.

4 Study Methodology

4.1 Background Information Review

Prior to mobilizing to the field to conduct the assessment and delineation, WESTON reviewed existing information concerning the presence and possible extent of wetlands at the project site. Information reviewed included:

- US Geological Survey (USGS) topographic survey maps of the area;
- Current aerial photography of the area.
- Federal Emergency Management Agency (FEMA) maps consulted to determine whether floodplains were present on the site;
- US Natural Resource Conservation Service (NRCS) soil maps of the area; and
- US Fish and Wildlife Service (NFWS) National Wetland Inventory (NWI) maps of the area;

Prior to delineation activities, WESTON also conducted a half-day field reconnaissance of the project area to evaluate the site, coordinate site access, and prepare a health and safety plan for the work.

4.2 Field Delineation

The field investigation was conducted on October 18, 2012 by Gerry Gilliland and Mark Jaworski of WESTON. Wetlands were identified using the above-referenced methodologies promulgated in the 1989 Corps Manual and Regional Supplement. Vegetation was visually identified, soils on the property were sampled using a hand-held soil auger to a depth of at least eighteen (18) inches, and wetland hydrologic indicators were noted in both surficial and sub-surface investigations. WESTON flagged the boundaries of the wetlands using flagging tape and pin flags. Wetland boundaries were assigned a unique alpha-numeric identifier numbered sequentially. On October 22, 2012, the soil borings used to identify wetland areas (with the exception of SB-5) and all the flag locations used to delineate the wetland boundary along Pierson's Creek were recorded using a Trimble® Pathfinder ProXRS backpack Global Positioning System (GPS). The coordinates for the soil boring and flag locations are presented in Table 1. Photographs were taken at various observation points to document the vegetation and other features; Appendix A presents a photograph log. Project location and historical wetland delineation maps were used to aid in conducting the wetland delineation.

5 Results

5.1 Background Information Review Results

Results of the background data review discussed in Section 4 are provided in the following figures:

- Figure 1 - USGS Topographic Map
    - The topographic map indicates that the general area at and around the site is approximately 10 feet above mean sea level, and that the site is bordered by Conrail facilities to the west and south, the New Jersey Turnpike to the east, and commercial/industrial facilities to the north.
- Figure 2 - (Date) Aerial photograph
    - Current aerial photography indicates that the site contains Pierson's Creek and is bordered by Conrail facilities to the west and south, the New Jersey Turnpike to the east, and commercial/industrial facilities to the north.
- Figure 3 - FEMA Floodplain Map
    - The floodplain map indicates that the study area is located within a Special Flood Area Subject to the 1% Annual Chance Flood Event.
- Figure 4 - NRCS Soil Map
    - The soil map indicates that approximately 47% of the study area is comprised of Bigapple Loamy Sand (BhgA), 32% contains Rikers Loamy Sand (RkkcA), and 21% contains Urban Land Complex (URBHGB).
- Figure 5 – National Wetlands Inventory (NWI) Map
    - The NWI map indicates that Pierson's Creek contains Riverine wetlands.

5.2 Field Investigation Results

Wetlands

The field investigation was conducted along the eastern bank of Pierson's Creek, in the reach south of Delancey Street. The western bank of Pierson's Creek was inaccessible or was too steep to safely traverse. Nine (9) soil borings and sixteen (16) wetland delineation flags were installed. Based on the field investigation, WESTON identified that tidal emergent wetlands are present at the site. Due to the deeply incised nature of Pierson's Creek, the wetlands are mainly present in a long narrow band at the edge of the channel. The tidal wetlands become much wider near the culvert that runs beneath the Conrail rail yard in the southern portion of the study area. Tidal

inundation is the main hydrologic feature that is supporting the wetlands. Appendix B presents copies of the field logbooks and wetland delineation data sheets for the soil boring and flag locations.

Wetlands were identified based on low-chroma soil matrix and observed conditions including mottling. Vegetative species were observed and documented, and hydrological indicators such as soil saturation, water marks, drift lines, and observed drainage patterns were noted. Dominant vegetation at the locations investigated include: common reed (Phragmites australis) tree of heaven (Ailanthus altissima), black cherry (Prunus serotina), winged sumac (Rhus copallina), and stands of bamboo (Bamboo spp.). Figure 6 presents a map showing the soil boring and flag locations and the extent of wetlands encountered during the field delineation activities.

State Open Waters

Pierson's Creek would in itself constitute a State Open Water, as it does not meet the exclusionary criteria found in N. J.A.C. 7:7A-1.4 Definitions.

6 Conclusions

As a result of the on-site investigations at Pierson's Creek, tidal emergent wetlands were identified adjacent to the Creek that exhibited the criteria necessary to be classified as jurisdictional wetlands in accordance with the 1989 USACE Manual.

- The areas had a vegetative community that contained a predominance (greater than 50% aerial coverage) of hydrophytic plant species.
- Hydric soil conditions were present at these wetland locations.
- There were indicators of wetland hydrology at each location.

Due to the positive identification of all three features, the wetlands along Pierson's Creek also meet the Code of Federal Regulations (CFR) definition of wetlands in 40 CFR Section 230.3.

7 References

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe, 1979. Classification of Wetlands and Deepwater Habitats of the United States, FWS/OBS-79/31 USDI. U.S. Fish and Wildlife Service, Biological Services Program, Washington D.C.

Federal Emergency Management Agency (FEMA), June 2007. Flood Insurance Rate Map Essex County, New Jersey: Panel 159 of 200. Map number 34013CO159F.

Federal Interagency Committee for Wetland Delineation. 1989. Federal Manual for Identifying and Delineating Jurisdictional Wetlands. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and U.S. Department of Agriculture. Soil Conservation Service, Washington, D.C. Cooperative technical publication.

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Soil Conservation Service, 1982. National List of Scientific Plant Names Vol. I and II.; U.S. Department of Agriculture, SCS-TP-159. Washington D.C.

U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) and New Jersey Department of Environmental Protection (NJDEP) Soil Survey, June 2004. Geographic 2005 (SSURGO) Database for Essex County, New Jersey (Projected to NJ State Plane Feet, NAD83). http://www.state.nj.us/dep/gis/digidownload/zips/soil/essssurgo.zip.

U.S. Fish and Wildlife Service, October 2010. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, DC. FWS/OBS-79/31. http://www.fws.gov/wetlands.

U.S. Geologic Survey (USGS), 1981 and 1995. National Geographic TOPO!, 7.5-Minute Series (Topographic) Quadrangles: Elizabeth, NJ (1995) and Jersey City, NJ (1981).

U.S. Supreme Court, 2001. Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers.

U.S. Supreme Court, 2006. Rapanos v. United States and Carabell v. United States.

WESTON, 2012. Weston Solutions, Inc. Filed Logbook – wetlands, Pierson's Creek/Troy Chem Corp Inc., Newark, NJ, TDD # S05-0013-1111-015. October 2012.

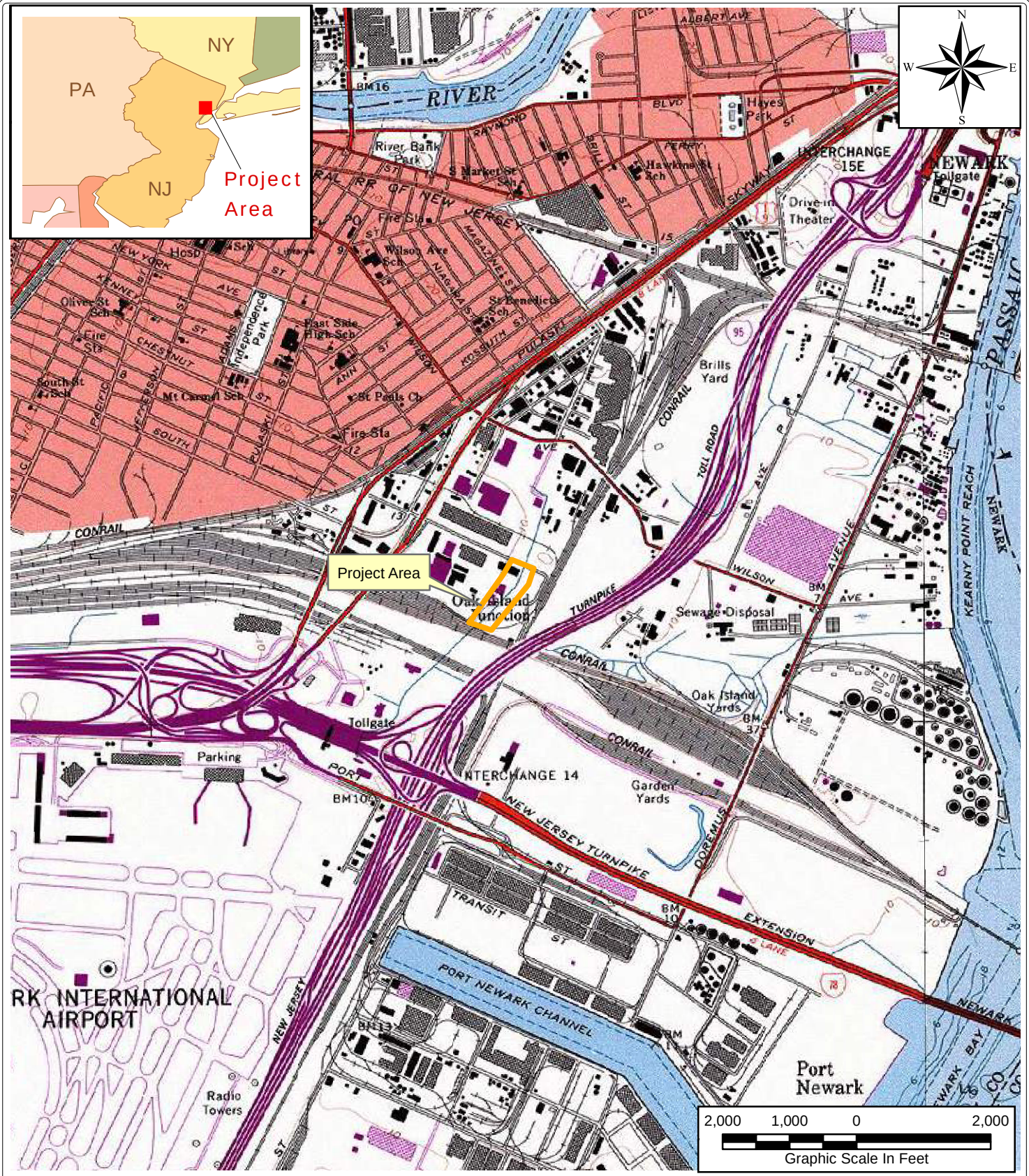
TABLES

TABLE 1. Wetland Soil Boring/Flag Location Coordinates
Pierson's Creek, Newark, NJ - October 2012

ID	Description	Latitude/Longitude (WGS 1984)		Northing/Easting (NJ State Plane 1983)	
		Latitude	Longitude	Northing	Easting
SB-1	Soil Boring 1	40.713102	-74.147644	684875.75	589799.17
SB-2	Soil Boring 2	40.713086	-74.147596	684869.95	589812.44
SB-3	Soil Boring 3	40.713211	-74.147459	684915.77	589850.20
SB-4	Soil Boring 4	40.713361	-74.147297	684970.44	589894.77
SB-5	Soil Boring 5	coordinates not recorded			
SB-6	Soil Boring 6	40.714230	-74.146163	685288.13	590208.00
SB-7	Soil Boring 7	40.714480	-74.146077	685379.29	590231.42
SB-8 and F-15	Soil Boring 8 / Flag location 15	40.712973	-74.147819	684828.44	589750.87
SB-9	Soil Boring 9	40.712537	-74.148181	684669.31	589650.95
F-1	Flag location 1	40.713061	-74.147686	684860.78	589787.41
F-2	Flag location 2	40.713129	-74.147588	684885.61	589814.66
F-3	Flag location 3	40.713231	-74.147474	684922.80	589846.08
F-4	Flag location 4	40.713282	-74.147390	684941.70	589869.11
F-5	Flag location 5	40.713370	-74.147262	684973.75	589904.68
F-6	Flag location 6	40.713453	-74.147148	685004.22	589936.08
F-7	Flag location 7	40.713611	-74.146912	685061.98	590001.12
F-8	Flag location 8	40.713689	-74.146800	685090.65	590032.07
F-9	Flag location 9	40.713845	-74.146557	685147.52	590099.25
F-10	Flag location 10	40.713996	-74.146398	685202.62	590143.08
F-11	Flag location 11	40.714101	-74.146294	685241.18	590171.83
F-12	Flag location 12	40.714255	-74.146203	685297.26	590196.73
F-13	Flag location 13	40.714472	-74.146060	685376.38	590236.18
F-14	Flag location 14 (fence at intersection of Pierson's Creek and south side of Delancey St)	40.714796	-74.145879	685494.66	590285.91
F-15	Soil Boring 8 and Flag location 15	same as Soil Boring 8 (see above)			
F-16	Flag location 16	40.712649	-74.148159	684710.25	589656.89

Note: All locations were logged electronically with GPS equipment, and differential correction of the data was performed according to EPA Region 2 SOPs; the table presents the differentially-corrected coordinates.

FIGURES



LEGEND:
Project Area

SOURCE:
National Geographic TOPO! U.S. Geologic Survey (USGS). 7.5 Minute Series (Topographic) Quadrangles: Elizabeth, NJ 1995 and Jersey City, NJ 1981.

PROJECT:
Pierson's Creek

TITLE:

USGS Topographic Map
Pierson's Creek
Newark, Essex County, NJ

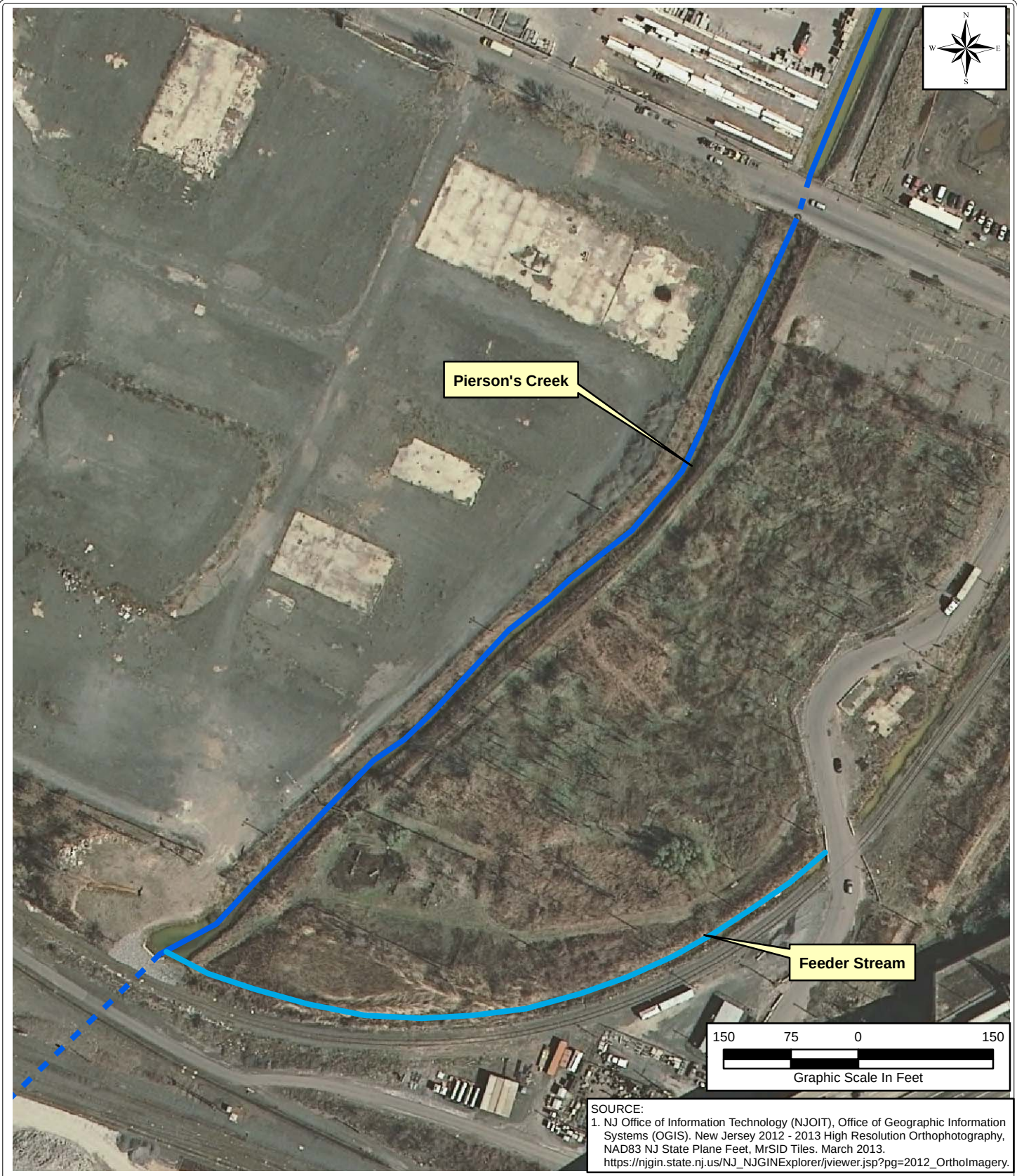
CLIENT NAME:
EPA

WESTON SOLUTIONS

DATE:
June 2014

FIGURE #:
1

P:\SAT2\Piersons Creek\MXD\2014_05_Wetlands\15097_PC_WR_USGS_Topographic _Map.mxd



SOURCE:
1. NJ Office of Information Technology (NJOIT), Office of Geographic Information Systems (OGIS). New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles. March 2013. https://njgin.state.nj.us/NJ_NJGINExplorer/jviewer.jsp?pg=2012_OrthoImagery.

LEGEND:

- Pierson's Creek
- Feeder Streams

TITLE:

Aerial Photograph of Site
Pierson's Creek
Newark, Essex County, NJ

PROJECT: Pierson's Creek

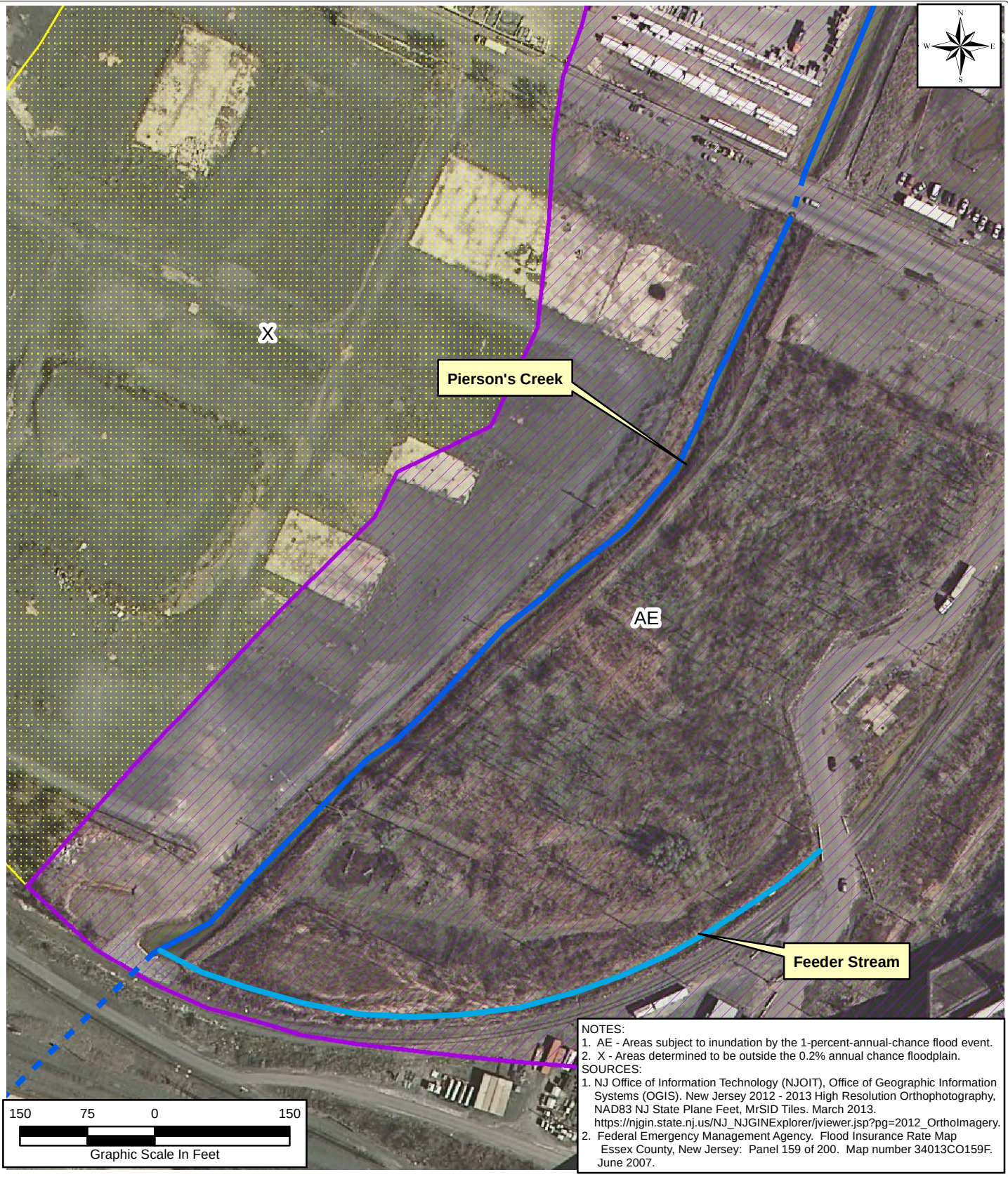
CLIENT NAME: EPA

WESTON SOLUTIONS

DATE: June 2014

FIGURE #: 2

P:\SAT2\Piersons Creek\MXD\2014_05_Wetlands\15099_PC_WR_Aerial_Map.mxd



NOTES:
1. AE - Areas subject to inundation by the 1-percent-annual-chance flood event.
2. X - Areas determined to be outside the 0.2% annual chance floodplain.

SOURCES:
1. NJ Office of Information Technology (NJOIT), Office of Geographic Information Systems (OGIS). New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles. March 2013. https://njgin.state.nj.us/NJ_NJGINExplorer/jviewer.jsp?pg=2012_OrthoImagery.
2. Federal Emergency Management Agency. Flood Insurance Rate Map Essex County, New Jersey: Panel 159 of 200. Map number 34013CO159F. June 2007.

LEGEND:
- Zone AE Flood Area
- Zone X Flood Area
- Pierson's Creek
- Feeder Streams

TITLE:

FEMA Floodplain Map
Pierson's Creek
Newark, Essex County, NJ

PROJECT: Pierson's Creek

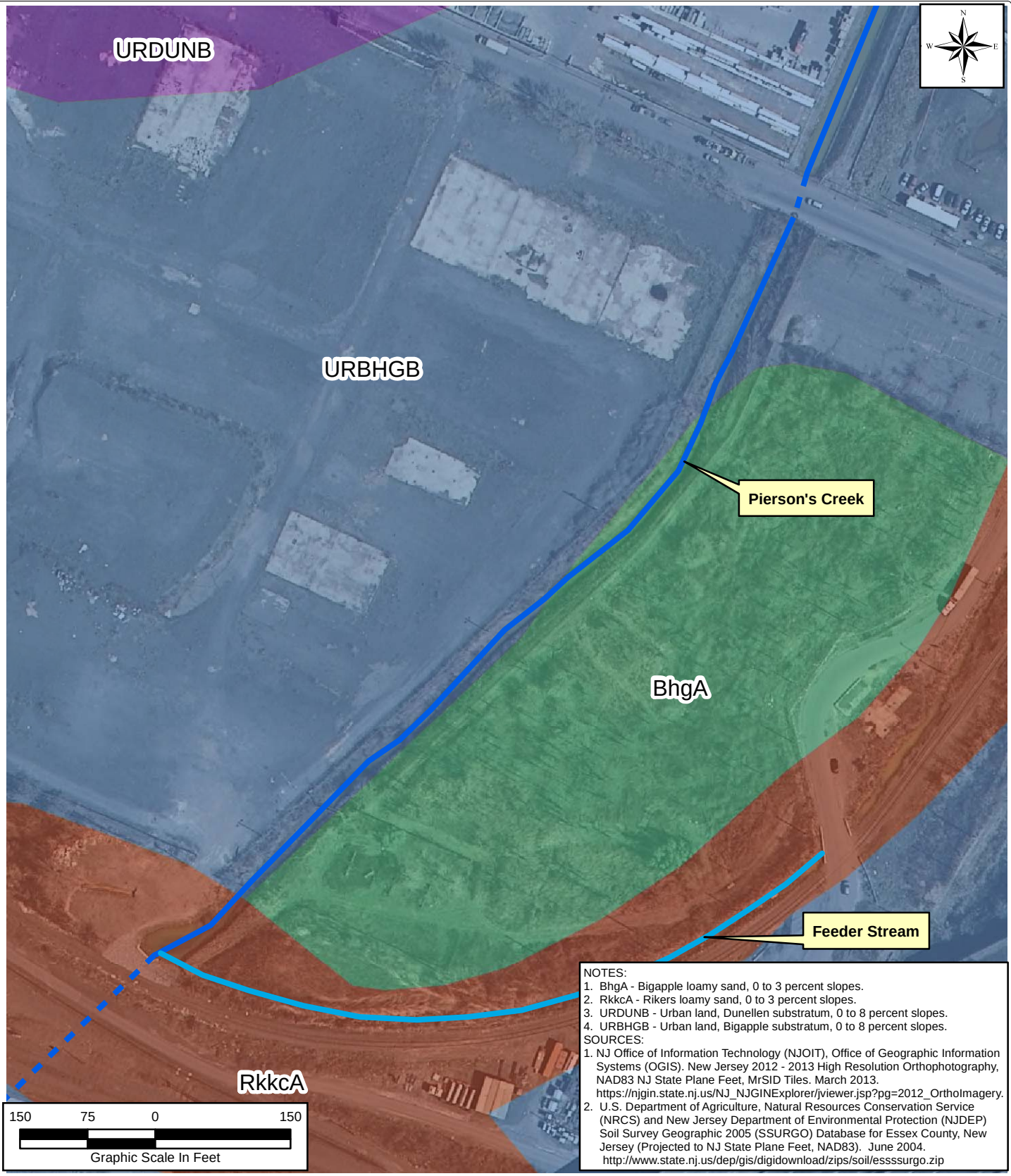
CLIENT NAME: EPA

WESTON SOLUTIONS

DATE: June 2014

FIGURE #: 3

P:\SAT2\Piersons Creek\MXD\2014_05_Wetlands\15098_PC_WR_FEMA_Floodplain_Map.mxd



NOTES:
1. BhgA - Bigapple loamy sand, 0 to 3 percent slopes.
2. RkkcA - Rikers loamy sand, 0 to 3 percent slopes.
3. URDUNB - Urban land, Dunellen substratum, 0 to 8 percent slopes.
4. URBHGB - Urban land, Bigapple substratum, 0 to 8 percent slopes.

SOURCES:
1. NJ Office of Information Technology (NJOIT), Office of Geographic Information Systems (OGIS). New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles. March 2013. https://njgin.state.nj.us/NJ_NJGINExplorer/jviewer.jsp?pg=2012_OrthoImagery.
2. U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) and New Jersey Department of Environmental Protection (NJDEP) Soil Survey Geographic 2005 (SSURGO) Database for Essex County, New Jersey (Projected to NJ State Plane Feet, NAD83). June 2004. http://www.state.nj.us/dep/gis/digidownload/zips/soil/essssurgo.zip

LEGEND:
- Pierson's Creek
- Feeder Streams

TITLE:

NRCS Soil Map
Pierson's Creek
Newark, Essex County, NJ

PROJECT: Pierson's Creek

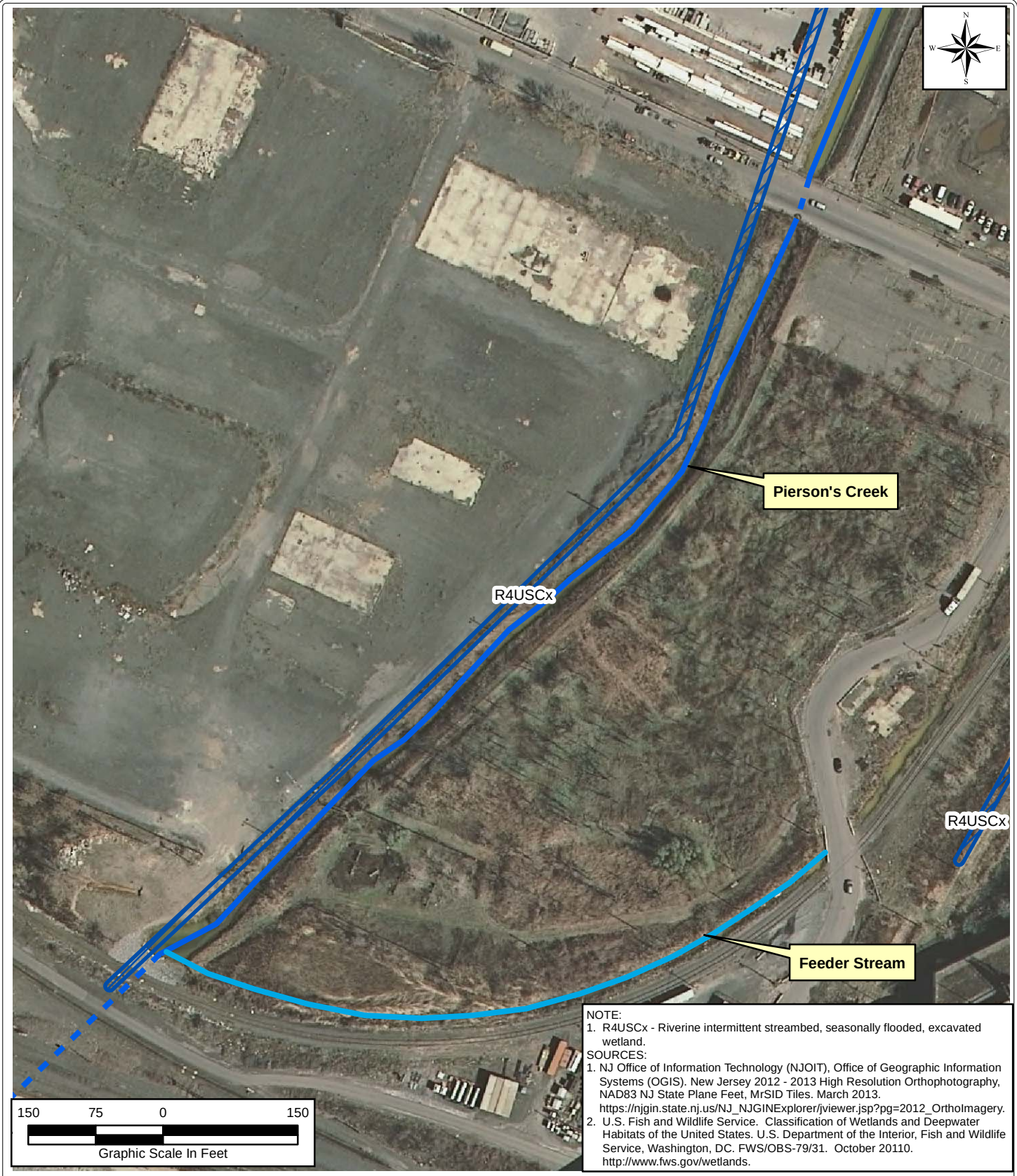
CLIENT NAME: EPA

WESTON SOLUTIONS

DATE: June 2014

FIGURE #: 4

P:\SAT2\Piersons Creek\MXD\2014_05_Wetlands\15095_PC_WR_NRSC_Soil_Map.mxd



NOTE:
1. R4USCx - Riverine intermittent streambed, seasonally flooded, excavated wetland.

SOURCES:
1. NJ Office of Information Technology (NJOIT), Office of Geographic Information Systems (OGIS). New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles. March 2013. https://njgin.state.nj.us/NJ_NJGINExplorer/jviewer.jsp?pg=2012_OrthoImagery.
2. U.S. Fish and Wildlife Service. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, DC. FWS/OBS-79/31. October 20110. http://www.fws.gov/wetlands.

LEGEND:
- NWI Wetlands
- Pierson's Creek
- Feeder Streams

TITLE:

NFWS NWI Map
Pierson's Creek
Newark, Essex County, NJ

PROJECT: Pierson's Creek

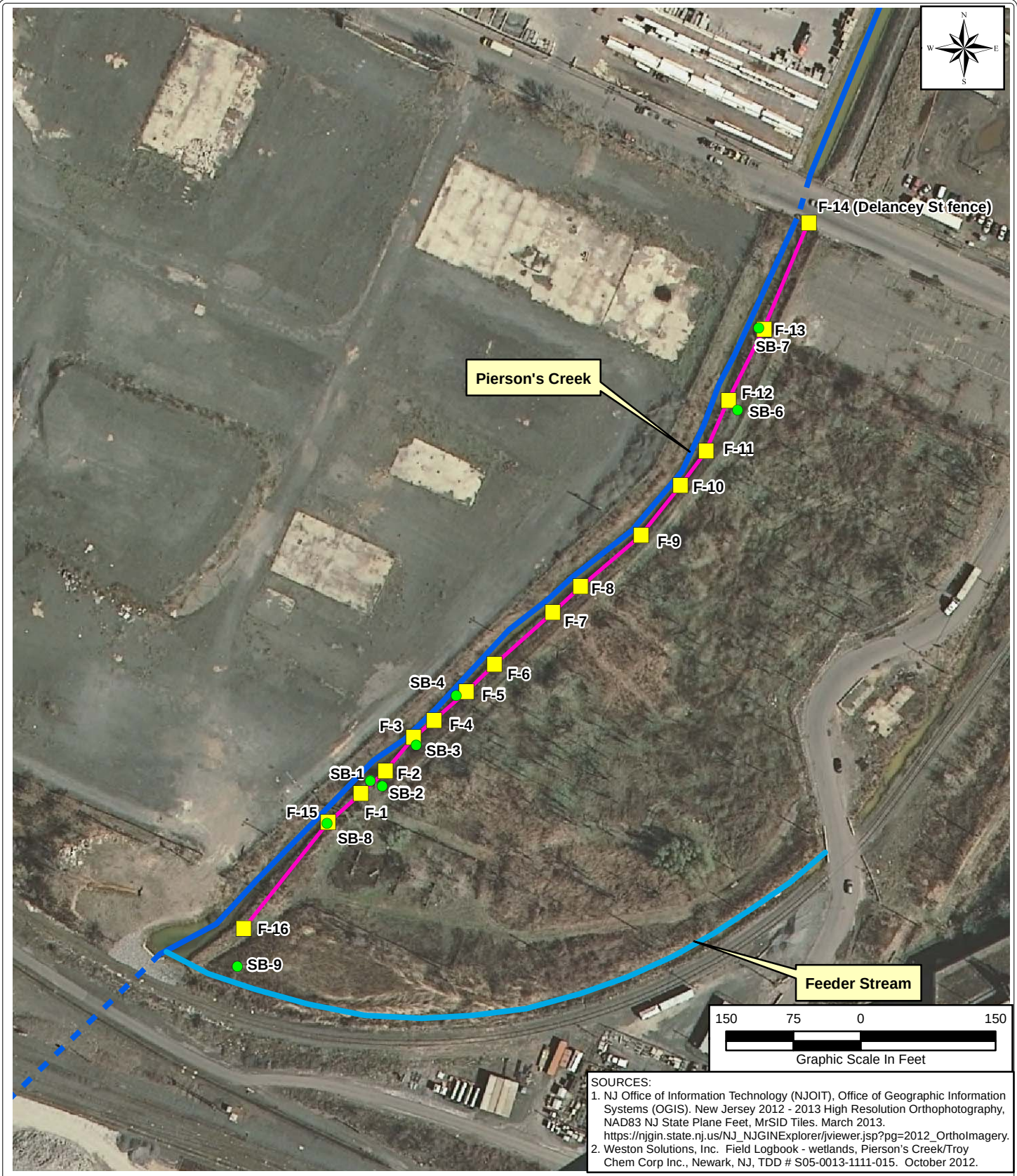
CLIENT NAME: EPA

WESTON SOLUTIONS

DATE: June 2014

FIGURE #: 5

P:\SAT2\Piersons Creek\MXD\2014_05_Wetlands\15096_PC_WR_NFWS_NWI_Map.mxd



SOURCES:
1. NJ Office of Information Technology (NJOIT), Office of Geographic Information Systems (OGIS). New Jersey 2012 - 2013 High Resolution Orthophotography, NAD83 NJ State Plane Feet, MrSID Tiles. March 2013. https://njgin.state.nj.us/NJ_NJGINExplorer/jviewer.jsp?pg=2012_OrthoImagery.
2. Weston Solutions, Inc. Field Logbook - wetlands, Pierson's Creek/Troy Chem Corp Inc., Newark, NJ, TDD # S05-0013-1111-015. October 2012.

LEGEND:
- Soil Boring
- Wetlands Flag Location
- Wetland Frontage
- Pierson's Creek
- Feeder Streams

TITLE:

Wetland Frontage
Pierson's Creek
Newark, Essex County, NJ

PROJECT: Pierson's Creek

CLIENT NAME: EPA

DATE: June 2014

FIGURE #: 6

P:\SAT2\Piersons Creek\MXD\2014_05_Wetlands\15106_PC_WR_Wetland_Frontage.mxd

APPENDIX A

PHOTOGRAPH LOG

Photograph Log
Wetland Assessment and Delineation – October 2012
Pierson's Creek, Newark, NJ

Pierson's Creek study area, looking south from Delancey Street (photograph taken during reconnaissance in December 2011).

Hydric soil and hydrophytic vegetation at soil boring location SB-1.

Photograph Log
Wetland Assessment and Delineation – October 2012
Pierson's Creek, Newark, NJ

Looking west at location SB-1.

Soil core from soil boring SB-2, located upslope from the identified wetland.

Photograph Log
Wetland Assessment and Delineation – October 2012
Pierson's Creek, Newark, NJ

Looking west-southwest at location of Soil Boring SB-3.


Hydrophytic vegetation at soil boring location SB-4.

Photograph Log
Wetland Assessment and Delineation – October 2012
Pierson's Creek, Newark, NJ

Soil boring location SB-4.

Soil boring location SB-5.

Photograph Log
Wetland Assessment and Delineation – October 2012
Pierson's Creek, Newark, NJ

Collecting soil core at soil boring location SB-6.

Soil core and hydrophytic vegetation at soil boring location SB-7.

Photograph Log
Wetland Assessment and Delineation – October 2012
Pierson's Creek, Newark, NJ

Soil boring location SB-8.

Soil core from Soil Boring SB-9, located at the wetland margin.

APPENDIX B

FIELD LOGBOOKS AND WETLAND DELINEATION DATA SHEETS

FIELD LOGBOOK

"Rite in the Rain"®

ALL-WEATHER

ENVIRONMENTAL

No. 550F

PIERSON'S CREEK /
-TROY CHEM CORP INC.
NEWARK, NJ
TDD# 505-0013-1111-015

"Rite in the Rain"®
ALL-WEATHER WRITING PAPER

ALL-WEATHER
ENVIRONMENTAL FIELD BOOK

Name Weston Solutions, Inc.
Raymond Stark III
Address 205 Campus Drive
Edison, NJ 08837
Phone 732-417-5812

Project Pierson's Creek HRS
TDD No. 505-0013-1111-05

This book is printed on "Rite in the Rain" All-Weather Writing Paper - A unique paper created to shed water and enhance the written image. It is widely used throughout the world for recording critical field data in all kinds of weather. For best results, use a pencil or an all-weather pen.

Specifications for this book

Page Pattern		Cover Options	
Left Page	Right Page	Polydura Cover	Fabrikoid Cover
Columnar	1/4" Grid	Item No. 550	Item No. 550F

CONTENTS

PAGE	REFERENCE	DATE

Reference Page Index

CONTENTS

PAGE	REFERENCE	DATE

Location Newark, NJ Date 12-14-11

Project / Client Passaic Creek WRS/EPA

1050 - Off-site recon - Weston/Scott Snyder

- Observed Passaic Creek from Delancy St. - Open section north of Delancy St ~ 300' until next culvert.
- Segment surrounded by barbed wire fence and industrial/trucking facilities.
- Phragmites line the banks, not too steep.
- ?: Is there even a way to access this portion of the creek.
- Observed creek looking south.
- Same as the north - longer open segment.
- SE corner - empty lot - NJDEP Inv/Cleanup - ID# 009957
- NE corner: Diamond Freight Dist. Co. Inc. 54 Delancy St. 07103 - 973-589-~~03~~ 0394

12/14/11

Location Newark, NJ Date 12-14-11

Project / Client Piersons Creek NRS/EPA

Photo Log

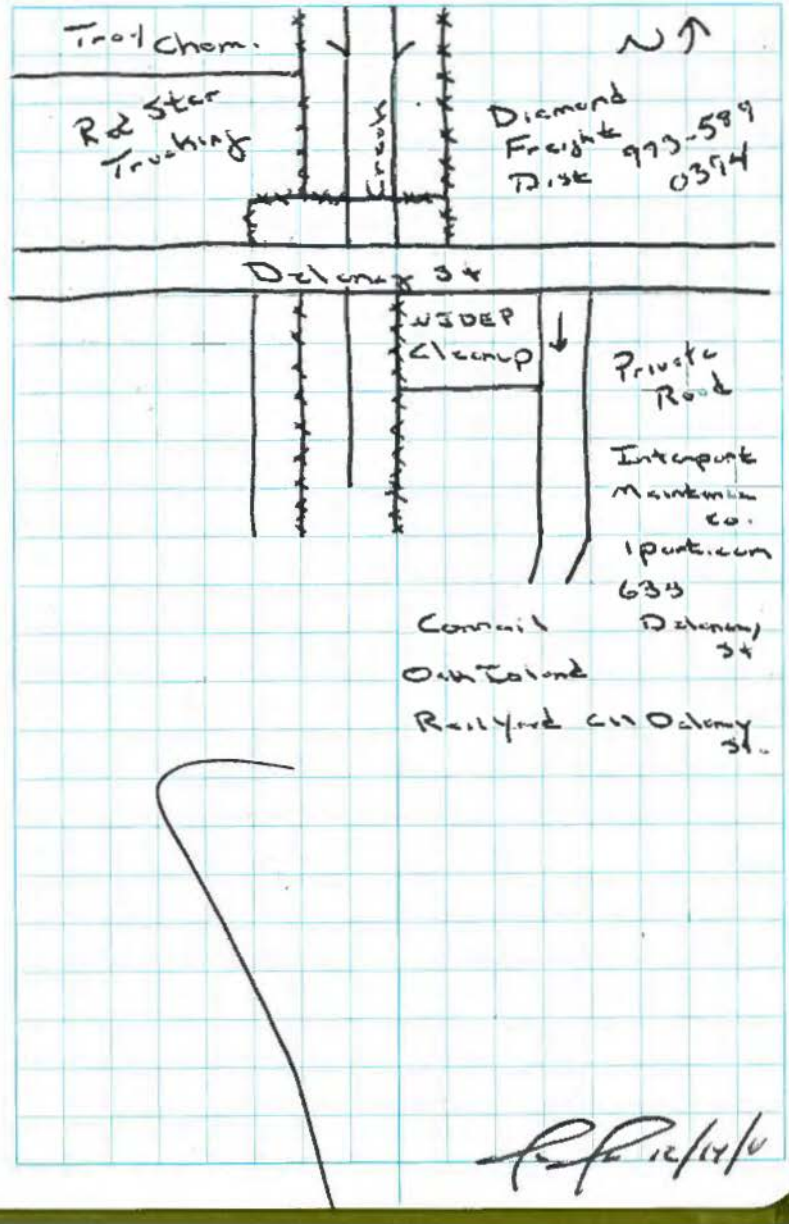
1673-12-14-1: Piersons Creek looking N from Delancy St.

1673-12-14-2: Piersons Creek looking S from Delancy St.

1673-12-14-3. Sing for NJDEP & empty lot in SE corner.

Location Newark, NJ Date 12-14-11

Project / Client Piersons Creek NRS/EPA



Location Newark, NJ Date 12-14-11

Project / Client Passaic's Creek NRS/EPA

1025 - Observe private road to east of empty lot. ? Creek Access. Talk to contractor driving by. - heavy security & Conrail/ind. Says I can likely drive down road, nobody will notice.

Signature: Interport Maintenance Co
635 Delancy St.
Conrail - Ock Island
611 Delancy St.

1130 - Return to car - drive around. -

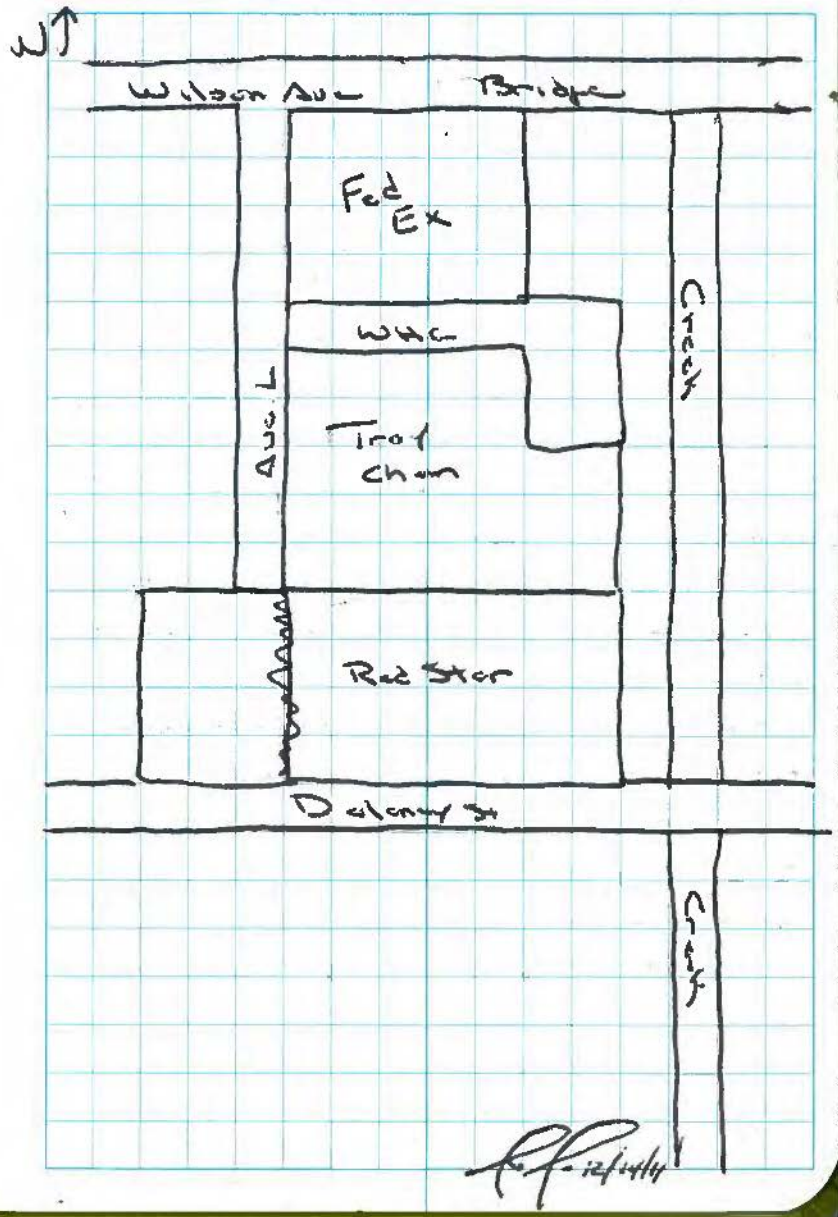
1140 - Arrive Wilson Ave & Ave L. Unable to observe creek from here. Will have to access Troy Chem and FedEx. In between Troy Chem and FedEx is Welch, Holme, and Clark Co, Inc. - No address/phone # on sign.

1200 - End recon.

12/14/11

Location Newark, NJ Date 12-14-11

Project / Client Passaic's Creek NRS/EPA



12/14/11

Location Newark, NJ Date 3-21-12

Project / Client Passaic Creek / EPA

1100 - Scott Snyder, Gary Gilliland, WESTON on site for recon. Meet at Ave L in front of FedEx Facility.

Weather - Cloudy ~ 60°F, clearing later.

1103 - Dan Gaughen, EPA } on site.
Dennis Munhall, EPA
Sami , City of Newark
20+ yrs experience w/ city/

- Joe Fox is licensed surveyor for ENVR can for storm water plans.

16 x 5'/2 x 6 culvert along Ave L
FedEx tried in - runs to S end of Ave L, makes 90° turn to east → to Passaic Creek

1124 - Over to Continental Industries —

- Observe concrete-lined portion with Troy
- East ditch / tributary
- Unlined portion south of Delong St. -
- Fence along to Newark.
- Creek in environmental easement

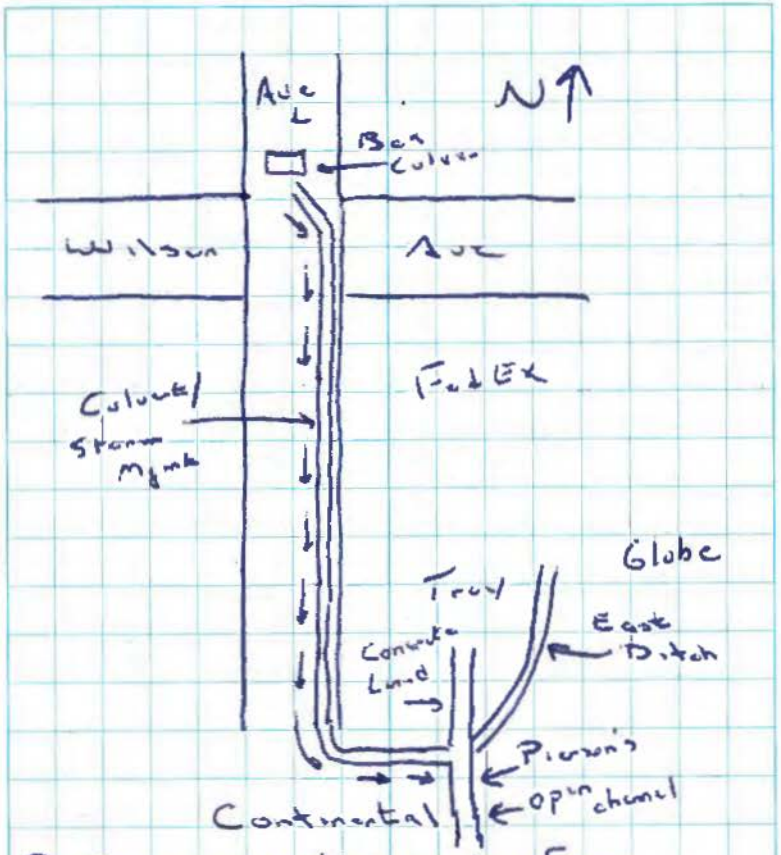
1145 Over to Conrail property —

- Access to creek segment south of Delong St.

3/21/12

Location Newark, NJ Date 3-21-12

Project / Client Passaic Creek / EPA



Creek receives storm water from box culvert down along Ave L

3/21/12

Location Newark, NJ Date 3-21-13

Project / Client Passaic Creek / EPA

- Creek through culvert under RR tracks
- Emerges south side - accessible for sampling. Enters culvert again believed to resurface just north of Rt 78.

1215 - Return to Auth. EPA depots

1230-1300 - Break for lunch.

1315 - Gillund, Snyder attempt to located exposed portion of creek by Rt 78.

- Drive east on Wilson to Duremus
- Head south to end, then west again.

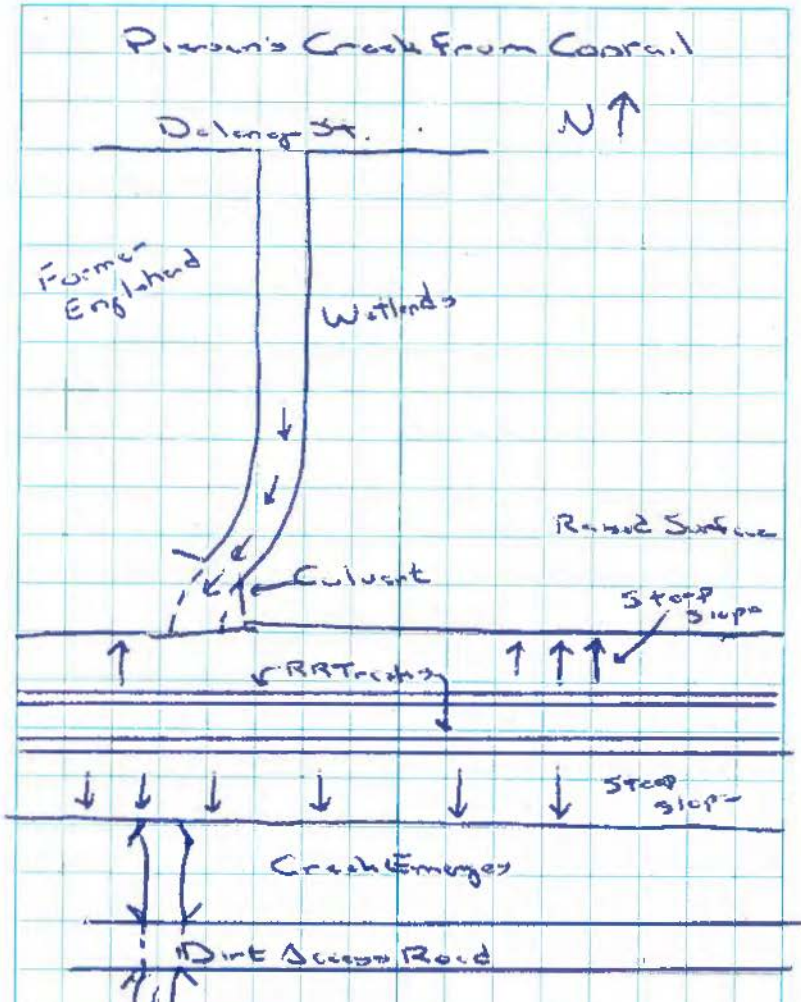
1400 - Arrive on Frontage Rd. At the end are two private parking lots. The open area we are looking for likely accessed on east side of lots. Will reschedule a return trip with EPA to gain access and observe accessibility.

1420 - Return to Auth. Depot.

3/21/13

Location Newark, NJ Date 3-21-13

Project / Client Passaic Creek / EPA



Location Newark, NJ Date 3-21-12

Project / Client Pierson's Creek / EPA

Summary of Recon

Description Moving North to South

- Storm water from creek northeast west routed to box culvert on Ave L, just north of intersection with Wilson Ave. Culvert runs along east side of Ave L, turns left at south end of Ave L, discharges to 1st open channel of creek just south of Troy Chem.
- EPA and Weston observe that the concrete-lined portion within Troy is not perennial. No water flowing and clogged with soil, vegetation and debris. East ditch is also not perennial. Barely any stream channel is evident, densely vegetated and filled with soil.
- Just south of Troy, along Continental Hardware is the 1st perennial segment. Pierson's Creek north of Delancy St is divided into two segments by a culvert that runs under an extension of Continental's parking lot / storage area.

3/21/12

Location Newark, NJ Date 3-21-12

Project / Client Pierson's Creek

- Will need to obtain access from Continental for sampling.
- The fencing surrounding the creek is maintained by the City of Newark. Will have to arrange for City to roll back cyclone fence for sampling.
- Long open segment south of Delancy St - believed to contain wetland frontage - may be more easily accessed from the southend within Conrail facility.
- The creek is then routed through a culvert underneath a steep embankment that supports Conrail's RR track and container storage ~50' above surrounding grade.
- Creek emerges on south side of embankment, then underdirt excavated, open cut in, then back into culvert.
- Believed to emerge again by Rt. 78 - will confirm later.
- Propose sample collection along open segments Troy → Rt. 78.

3/21/12

Location Newark, NJ Date 3-21-12

Project / Client Pierson's Creek

Summary (cont)

- Observe possible background sample location in a drainage channel that is similar to Pierson's Creek. Located on Conrail's property east of Pierson's Creek. This channel has the appearance of a remnant of a pre-development stream channel similar to Pierson's Creek.

3/21/12

Location Newark, NJ Date 10/16/12

Project / Client PIERSON'S CREEK / TICOM EPA

0815 WESTON ARRIVED AT SITE GERRY GILLILAND (GG), DAN CARLSON (DC), ALICIA BELL (AB), MICHELE CAPRIGLIONE (MC) MET ILDEFONSO ACOSTA (IA) OF EPA

WEATHER: SUNNY, COOL (~55°F) GG

0830 HOWARD NICHOLS OF TRC AND OWNER NIKOLAS AGATHOS (PARKING LOT) MET WITH US, SHOWED US HOW TO GET ACCESS TO TRIBUTARY OFF PARKING LOT ON OLYMPIA DRIVE

0845 IN PARKING LOT, SETTING UP FOR SAMPLING. GG

0900 TAILGATE SAFETY MEETING: PHYSICAL HAZARDS: TERRAIN, VEGETATION, STREAM DEPTH BIO: TICKS, POISON IVY, POISON OAK, CHEMICAL: VOC, MERCURY (PID & JEROME METER) GG

0925 COLLECTED PC-TB01 (VOC ONLY)

0930 COLLECTED PC-RINS1 FROM THE DECONTAMINATED AUGER ITEMS GG

0930 PID IS CALIBRATED BY ME/AB; PINE ENV ID 19077; BKG = 0.0-0.2 ppm

JEROME 431-X MERC ANALYZER, PINE ENV ID 012665; SN 2858; BKG = 0.004 mg/m³

10/16/12

Location NEWARK, NJ Date 10/16/12

Project / Client PIERSON'S CREEK - TROY EPA

1000 MOBILIZE THROUGH GATE AT EDGE OF PARKING LOT. DOWNSTREAM INACCESSIBLE, ~~SAME~~ SO SW01 IS MOVED TO ~15' FROM GATE.
1020 COLLECTED PC-SW01 ; PHOTO
1050 COLLECTED PC-SD01A
1120 COLLECTED PC-SD01B 6"-12"
1150 MOBILIZING TO LOCATION PC-SW02
1225 COLLECTED PC-SW02 ———
1300 COLLECTED PC-SD02A ———
NOTE: DUE TO MOVING LOCATIONS 1 & 2 UPSTREAM FOR ACCESSIBILITY, WE ARE SKIPPING #3. ———
1310 COLLECTED PC-SD02B ———
1345 BACK TO COMMAND POST - SMO & BREAK
1440 SKIP LOCATION PC-SW01 ET AL (SEE ABOVE) ———
1500 COLLECT PC-SW04 ; pH = 6 ———
1510 COLLECT PC-SD04A ———
1525 COLLECT PC-SD04B ; SOME ORGANIC ODOR FROM AT THIS SAMPLE ; NO PID ABG.
1600 SAMPLING FINISHED FOR TODAY. CLEARED BY OWNER TO RETURN TOMORROW. PACKING UP TODAY'S SAMPLES. ——— GG
1700 OFF SITE.

Location NEWARK, NJ Date 10/16/12

Project / Client PIERSON'S CREEK - TROY / EPA

1700 SAMPLING SUMMARY: ——— GG
DUE TO LIMITED ACCESSIBILITY, WE MOVED LOCATIONS SW01 AND SW02 UPSTREAM, DELETED LOCATION SW03, COLLECTED SW04 DOWNSTREAM FROM OUTFALL. ——— GG
SAMPLES WERE COLLECTED ACCORDING TO THE SAMPLING PLAN DATED APR 2012/REV OCT 2012. GG
SOME SED DEPTHS WERE NOT ACHIEVABLE, AS NOTED ON FIELD DATA SHEETS ——— GG
FIRST LOCATION WAS COLLECTED AT HIGH TIDE; STREAM RIGHT TO EDGE OF PARKING LOT. TIDE BEGAN TO GO OUT DURING THAT SAMPLE (FLOW WAS STILL/SLIGHTLY UP AT START, THEN CHANGED TO DOWNSTREAM FLOW). WATER ELEVATION DROPPED A FEW FEET BY END OF DAY. ——— GG
ALL SW SAMPLES WERE GRAB SAMPLES COLLECTED AT WATER'S SURFACE DIRECTLY INTO BOTTLES. ——— GG
ALL SEDIMENT SAMPLES WERE COLLECTED WITH STAINLESS-STEEL AUGERS; VOCs WERE COLLECTED FROM AUGER DIRECT TO ENCORES; REMAINING FRACTIONS (SVOCs/PESTS/ARCLORS/METALS/GS/TOC) HOMOGENIZED IN ALUMINUM TRAY W/PLASTIC SCOOP (DEDICATED) ——— GG
10/16/12

Location NEWARK, NJ Date 10/16/12

Project / Client PIERSON'S CREEK

PHOTO LOG - 10/16/12

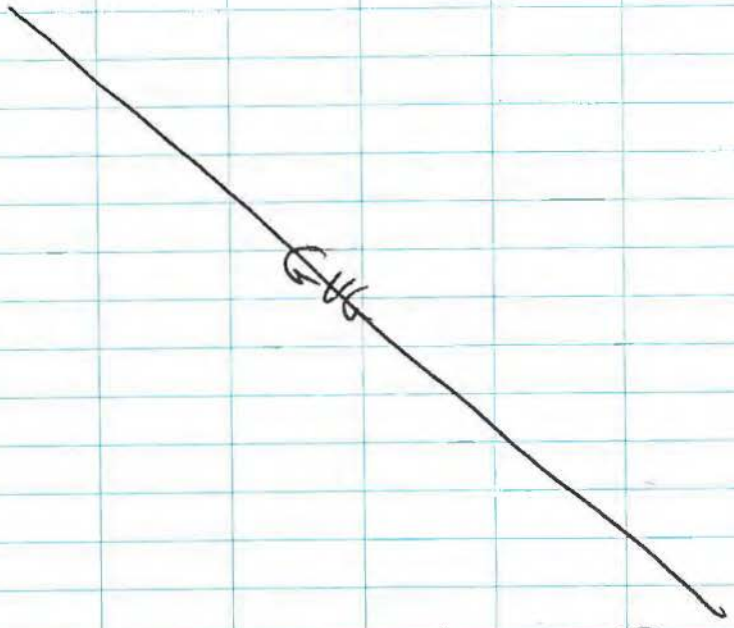
PC-101612-01: COLLECTION OF SAMPLE PC-SW01, LOOKING SW — GG

PC-SD01B, LOOKING SW — GG

PC-~~101612~~ 101612-03: LOCATION PC-SW02 — GG

PC-101612-04: LOOKING AT NJ TPKE SIGN FROM LOCATION PC-SW02 — GG

PC-101612-05: COLLECTION OF PC SW02



10/16/12

Location NEWARK, NJ Date 10/17/12

Project / Client PIERSON'S CREEK

0815 WESTON ARRIVED ON SITE GG, MC, DC, AB; IA OF EPA HERE

0820 PREPARING FOR SAMPLING, TAILGATE SAFETY MEETING: PHYS/BIO/CHEM

WEATHER: SUNNY AND COOL, LIGHT BREEZE

LOCATION: PARKING LOT, OLYMPIA DRIVE

0830 SCOPED OUT SAMPLE LOCATIONS; FURTHER UPSTREAM ALONG FEEDER STREAM, BETWEEN TPKE AND LOT. — GG

THERE'S NOT ENOUGH STANDING WATER, LOTS OF DEBRIS ⇨ NO SAMPLES AT LOCATION 6(IA)

0845 MOBILIZE TO LOCATION SW05

0855 COLLECTED SURFACE WATER SAMPLE PC-SW05 FROM FEEDER STREAM; PH = 6

0900 COLLECTED PC-SW03 (DUP OF SW05)

0935 COLLECTED PC-SD05A, SAME LOCATION AS PC-SW05, 0"-6" — GG

0940 COLLECTED PC-SD05C (DUP OF SAMPLE PC-SD05A) — GG

0955 COLLECTED PC-SD05B FROM DEPTH OF 12"-18"; WATER DEPTH = 24" — GG

LATE ENTRY 0850 COLLECTED TRIP BLANK PC-TB02 — GG

10/17/12

Location NEWARK, NJ Date 10/17/12

Project / Client PIERSON'S CREEK - TROY

1000 IA AND GG CONTACTED DAVE REILLY OF CONRAIL, SCOPED OUT SAMPLE LOCATIONS - CONRAIL CANNOT GIVE US ACCESS TO LOCATIONS SW07/8/9 ACROSS TRACKS TODAY, BUT WE ARE WELCOME TO ACCESS FROM OTHER SIDE (AVIS PARKING LOT); OTHER LOCATIONS (SW10/11/12/26/27) → WE ARE FREE TO SAMPLE → PARK CLEAR OF TRACKS TO SIDES.

1100 AVIS EMPLOYEES OPENED GATE AT BACK OF LOT FOR ACCESS TO SW08 & SW09. LOCATION SW07 AND ROUTE TO IT ARE OVERGROWN - IA ELIMINATES FROM SAMPLING.

1130 MOBILIZE TO BACK OF AVIS LOT, ~~FOR~~ THROUGH GATE, AND TO LOCATIONS ——— GG

1155 COLLECTED SURFACE WATER SAMPLE PC-SW08; BETWEEN PARKING LOT & CONRAIL

1215 COLLECTED SEDIMENT SAMPLE ——— GG PC-SD08A; SAME LOCATION ON FEEDER STREAM

1225 COLLECTED SAMPLE PC-SD08B

1310 COLLECTED SAMPLE PC-SW09

1320 COLLECTED SAMPLE PC-SD09A

1330 COLLECTED SAMPLE PC-SD09B

1430 SAMPLING TEAM DECONNING EQUIPMENT

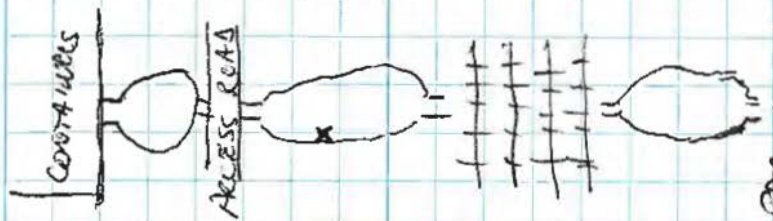
Gerald V. Gee

Location NEWARK, NJ Date 10/17/12

Project / Client PIERSON'S CREEK - TROY

1500 MOBILIZED BACK TO CONRAIL FOR SAMPLING

1525 COLLECTED SAMPLE PC-SW07 MIDDLE OPEN AREA SOUTH OF CONTAINERS



AT 1030, THE WATER LEVEL WAS UP TO THE TOP OF THE CULVERT PIPE. NOW IT'S DOWN 3' AND FLOWING OUT (SOUTH). STREAM BOTTOM IS ALL GRAVEL/RIP-RAP. COLLECT SEDIMENT SAMPLES FROM W. BANK OF STREAM; EXPOSED AT THIS TIME.

1540 COLLECTED SAMPLE PC-SD07A

1555 COLLECTED SAMPLE PC-SD07B

1630 PACKED UP AND READY

MOD WESTON OFF-SITE FOR DISP. BACK FOR SAMPLE MANAGEMENT. ——— GG

1900 SAMPLES TO FEDEX. ——— GG

Gerald V. Gee 10/17/12

Location NEWARK NJ Date 10/17/12

Project / Client PIERSON'S CREEK

PHOTO LOG - 10/17/12

PC-101712-06: PHRAGMITES AT LOCATION FOR SAMPLES PC-SW05 GG

PC-101712-07: COLLECTION OF SEDIMENT SAMPLE PC-SD05B GG

PC-101712-008: COLLECTION OF SURFACE WATER SAMPLE PC-SW08 GG

PC-101712-009: COLLECTION OF SEDIMENT SAMPLE PC-SD08A GG

PC-101712-010: COLLECTION OF SEDIMENT SAMPLE PC-SD09B GG

GG

NOTE: SAMPLING PROCEDURES SAME AS 10/16/12

- SW SAMPLES COLLECTED AT WATER'S SURFACE DIRECT TO BOTTLES; SEDIMENT SAMPLES EACH RETRIEVED W/ DECONTAMINATED AUGERS; VOC FRACTION DIRECT FROM AUGER TO ENCORES, OTHER FRACTIONS HOMOGENIZED, DEDICATED PAN/SCOOP.

NOTE: DECONTAMINATION FOR ALL AUGERS INCLUDES ① SOAP/WATER SCRUB ② WATER RINSE ③ DI WATER STEAM CLEAN GG

NOTE: GPS USED TO RECORD EACH SAMPLE LOCATION ACCORDING TO REGION 2 SOP, AT TIME OF SAMPLING

GG 10/17/12

Location NEWARK, NJ Date 10/18/12

Project / Client PIERSON'S CREEK

0800 WESTON ARRIVES ON SITE GERRY GILLILAND AND MARK JANOWSKI (MJ)

0815 MET WITH BRIAN STABILE OF MATRIX (CONSULTANT FOR ENGELHARD)

RICH PABST - PROPERTY SOLUTIONS

CONNOR PEDERSEN - PROPERTY SOLUTIONS (CONSULTANT FOR POTENTIAL BUYER)

0830 GG & MJ LOOK FOR ACCESS POINTS

0840 TAILGATE SAFETY MEETING FOR WETLAND DELINEATION - MOSTLY PHYSICAL HAZARDS; WEATHER SUNNY & COOL;

0900 MC, AB & DC ARRIVE ON SITE FOR SAMPLING ON CONRAIL PROPERTY. THEY CALIBRATED THE PID AND GEARED UP.

0930 COLLECTED SAMPLE PC-SW11, NEAR PIERSON'S CREEK CULVERT SOUTH OF ENGELHARD GG

0950 COLLECTED SAMPLE PC-SD11A, SAME LOCATION AS SW11, 0"-6" GG

1020 COLLECTED SAMPLE PC-SD11B, SAME LOCATION, 12"-18" GG

1020 GG & MJ PROCEEDING W/ WETLAND DELINEATION ALONG ENGELHARD PORTION OF PIERSON'S CREEK; SEE LOG SHEETS & GPS DATA

GG 10/18/12

Location NEWARK NJ Date 10/18/12

Project / Client PIERSON'S CREEK/TROY

1125 COLLECTED SAMPLE PC-SW12, FROM PIERSON'S CREEK NEAR CONRAIL/ENGELHARD LINE
1140 COLLECTED SAMPLE PC-SD12A
1155 COLLECTED SAMPLE PC-SD12B
BOTH SEDIMENTS SAME LOCATION AS PC-SW12 NEAR HIGH TIDE ~ HIGH WATER, STEEP SIDES, HEAVY PHRAGMITES. GG
1355 COLLECTED SAMPLE PC-SW06 (NOTE: NUMBER CHANGE FROM PC-SW26) FROM FEEDER STREAM ALONG CONRAIL TRACK (DITCH) —
1410 COLLECTED SAMPLE PC-SD06A
1425 COLLECTED SAMPLE PC-SD06B
1500 COLLECTED SAMPLE PC-SW27, FROM NORTH SECTION OF FEEDER STREAM ALONG TRACK
1515 COLLECTED SAMPLE PC-SD27A 0"-6"
1530 COLLECTED SAMPLE PC-SD27B 12"-18"
BOTH SEDS SAME LOCATION AS SW27 — GG
1600 SAMPLING TEAM PACK IN & UP
1630 SAMPLING TEAM OFF SITE — GG
LATE ENTRY: ~~GG~~ 1440 GG & MJ COMPLETED THIS PORTION OF THE WETLAND EVALUATION (FORMER ENGELHARD) AND OFF SITE — GG

10/18/12

Location NEWARK NJ Date 10/18/12

Project / Client PIERSON'S CREEK

PHOTO LOG - 10/18/12
PC-101812-001: SAMPLE LOCATION PC-SW11
PC-101812-002: LOOKING SOUTH AT CULVERT FROM LOCATION PC-SW11 — GG
PC-101812-003: COLLECTION OF SAMPLE PC-SW11 — GG
PC-101812-004: SAMPLE LOCATION PC-SW12
PC-101812-005: LOOKING NORTH FROM THE CULVERT NEAR PC-SW11; UPSTREAM VIEW
PC-101812-006: LOOKING NE AT CULVERT BENEATH ROAD NEAR LOCATION PC-SW06; FEEDER STREAM (DITCH) ALONG CONRAIL TRACK
PC-101812-007: SAMPLE LOCATION PC-SW27

10/18/12

Location NEWARK, NJ Date 10/22/12

Project / Client PIERSON'S CREEK

0930 GG & DC ON SITE TO CLEAR PATHS AND FLAG LOCATIONS ALONG THE FORMER ENGELHARD AND RED STAR/CONTINENTAL HARDWARE PORTIONS OF THE CREEK
WEATHER: SUNNY & MID, IN THE 60s (°F).
SAFETY: NO SAMPLING TODAY OR DIRECT ACCESS TO CREEK; BIGGEST CONCERNS ARE STEEP/ROUGH TERRAIN AND TICKS, SITE FLUIDS ——— GG
1000 IN ADDITION TO FLAGGING SAMPLE LOCATIONS WE ARE RECORDING GPS POINTS FOR WETLAND EVAL.
1230 ALL LOCATIONS FLAGGED ALONG ENGELHARD PORTION OF CREEK; GPS-LOGGING - FOUND ALL WETLAND FLAG (F) LOCATIONS - DELINEATES THE FRINGE WETLAND ALONG EAST SIDE OF CREEK; LOGGED ALL WETLAND SOIL BORINGS BUT ONE (SB-5)
1300 ARRIVED AT CONTINENTAL HARDWARE, CHECKED IN AT STORE, AND GAINED ACCESS TO PIERSON'S CREEK THROUGH FENCE
1400 OPENED PORTION OF FENCE TO ACCESS NORTHERNMOST SECTION OF CREEK.
1430 ALL LOCATIONS FLAGGED - OFF SITE.

GG

10/22/12

Location NEWARK, NJ Date 10/23/12

Project / Client PIERSON'S CREEK

0815 WESTON ARRIVES ON DELANEY ST. PERSONNEL: GG, MC, DC, PLUS COLETTE GREGOIRE (CG) AND TIMOTHY LAQUERRE (TL) ——— GG
BRIAN STABILE OF MATRIX AND RICH PAGET OF PROPERTY SOLUTIONS ARE HERE FOR OVERSIGHT FOR PROPERTY OWNER AND POTENTIAL BUYER, RESP.
0830 MOBILIZED ONTO 429 DELANEY ST PROPERTY, BEGAN SETTING UP.
DC HOLDS TAILGATE SAFETY MEETING: REVIEWS CHEMICAL, PHYSICAL & BIOLOGICAL HAZARDS
WEATHER: SUNNY & WARM, RAIN IN FORECAST
0845 PID (SAME AS LAST WEEK) CALIBRATED
0910 SAMPLING TEAM MOBILIZES TO SW13.
0925 COLLECTED TRIP BLANK PC-TB04
0930 CG & MC COLLECTED RINSATE PC-RIN02 FROM DECONTAMINATED AUGER HEAD ——— GG
0930 DC COLLECTED SAMPLE PC-SW13 FROM EAST BANK OF STREAM JUST NORTH OF BRIDGE
0955 COLLECTED SAMPLE PC-SW29 (DUPE OF SW13) ——— GG
1002 COLLECTED SAMPLE PC-SD13A FROM SAME LOCATION AS SW13 ——— GG

Location Newark, NJ Date 10/23/12

Project / Client Pierson's Creek

1038 Collected sample PC-SD13B from depth of 12"-18" CC

1127 Collected sample PC-SW14, east bank approx. 150' north of SW13

1200 Collected sample PC-SD14B from depth of 12"-18" CC

1215 Sample PC-SD14C (dup of SD14B)

1145 (late entry) Collected sample PC-SD14A from depth of 0"-6"; same location as SW14

1310 Erin Terwilliger will be on-site from Matrix Newworld tomorrow.

1320 ~~PC~~SW15 collected at location 15.

1340 ~~SD~~MC PC-SD15A collected

1350 PC-SD15B collected

1415 PC-SW16 collected.

1425 PC-SD16A collected.

1440 PC-SD16B collected.

1505 MC PC-SW17 collected.

1515 PC-SD17A collected.

1530 PC-SD17B collected.

VM Caplan

Location Newark, NJ Date ~~10/24/12~~ 10/23/12

Project / Client Pierson's Creek

1600 Brian Stabile + Rich Pabst depart site.

1610 DC, TL, CC decon all auger heads.

1640 Weston depart site.

VM Caplan

Location Newark, NJ Date 10/24/12

Project / Client Piersons Creek

1145 Weston Solutions Inc CG, TL, DC, and MC (same team as yesterday) arrives at gate on Delancy St. we meet Erin Terwilliger and Rich Bapst they are providing oversight for owner and perspective buyer respectively as recorded yesterday.

1150 Team sets up to sample location 18.

1155 TB05 collected.

1158 CG photo of locked gate and sign.

1200 Team set on location 18.

cm. glu

Location Newark, NJ Date 10/24/12

Project / Client Piersons Creek

1215 PC-SW18 collected.
1230 PC-SD18A collected.
1245 PC-SD18B collected.
1400 On continental Hardware property.

1440 PC-SW21 collected
1500 ~~PC-SW22~~ PC-SD22A collected
1510 ~~PC-S~~ PC-SD22B collected.

1540 Team moves to location 22; decide to use respirators.

1605 PC-SW22 collected.
1615 PC-SD22A (MS/MSD) collected
1630 PC-SD22B collected.

1730 Depart Continental Hardware.
Insert IA of ERA with us for afternoon.

cmglu

Location Newark, NJ Date 10/25/12

Project / Client Pierson's Creek

0800 - Weston arrived on Delancy St, to sample location 23.
Personnel: Dan Carlson (DC), Tim Laguerre (TL), and Colette Gregoire (CG)
0830 - Team dons appropriate PPE and organizes coolers/equipment.
DC holds safety briefing: Review of chemical, physical, and biological hazards and discusses use of respirators during sediment sampling. cg
0845 - PCSW23 collected by TL and CG. cg
0900 SD23A collected by DC + TL
0915 SD23B collected by DC + TL
0940 - Location 23 complete Hit of .007 mercury vapors, unsustained. 0.00 ppm VOCs at each interval.
1000 - Team set up at location 24. cg
1020 - PCSW24 collected by DC + TL cg
1030 - SD24A Collected by DC + TL cg
1045 - SD24B Collected by DC + TL cg

Location Newark, NJ Date 10/25/12

Project / Client Pierson's Creek

1110 - Team completed sampling at location 24. cg
1115 - Set up at location 25 cg
1115 - Readings for location 24: one unsustained background reading of .005 mercury vapor. .000 mercury vapor and 0.00 ppm at surface and subsurface. cg
1130 - PCSW25 collected cg
1145 - SD25A collected
1200 SD25B collected
1208 SD25CC (surface) collected
1250 - No hits for mercury or VOCs in background surface, or subsurface at location 25 cg
1300 - Sampling completed. Decon. cg
1330 - Team off-site cg

10/25/12

Colette Gregoire

FIELD LOGBOOK - WETLANDS

Rite in the Rain
ALL-WEATHER
FIELD
№ 351

PIERSON'S CREEK / TROY CHEM CORP INC.
NEWARK, NJ
TDD# 505-0013-1111-015

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CONTENTS

PIERSON'S CREEK - WETLAND LOGBOOK

10/18/12 GG & MJ OF WESTON ON SITE FOR WETLAND DELINEATION. SEE MAIN LOGBOOK FOR TIMES / SAFETY ETC.

0930 BEGIN WETLAND DELINEATION

SB = SOIL BORING F = FLAGS

– ALONG LEAF LINE

SB-1 (WETLAND BORING BANK OF STREAM)

~~10YR~~ 0"-6" 10YR 2/1 SILTY CLAY

6"-12" 10YR 2/1 SILTY CLAY W/ ORGANIC MATERIAL @ 10"; ~~SOME MOTTLING~~

12"-18" 10YR 2/1 SILTY CLAY

NOTE: DECIDE TO RECORD REMAINING INFORMATION ON DATA SHEETS

COMPLETED SB-1 THROUGH SB-9

WETLAND LINE ALONG CREEK INDICATED BY FLAGS F-1 TO F-14 (FENCE AT NORTH END); NORTH OF BRIDGE / DELANCEY ST. (I.E., CONTINENTAL HARDWARE PROPERTY) – BASED ON VISUAL OBSERVATION FROM ROAD, THIS AREA IS ALSO FRINGED BY SAME TYPE OF WETLANDS (NO SOIL BORINGS / FLAGGING IN THAT AREA, THOUGH)

ALL SOIL BORINGS / FLAGGING WERE ALONG THE ENGELHARD (~~429~~ 400 DELANCEY) PORTION OF CREEK AND SOUTH INTO CONRAIL PROPERTY.

10/18/12

PIERSON'S CREEK 10/18/12

SB-9 IS IN PHRAGMITES NEAR SOUTH END OF PIERSON'S NEAR CONRAIL LINE (INLAND FROM SAMPLE PC-SW11)

SB-9 IS CHARACTERISTIC OF THE ENTIRE WETLAND, BOTH SIDES OF PIERSON'S CREEK (PHRAGMITES, WET AREA – FLOODS), AT SOUTHERN END OF THIS OPEN SECTION (CONRAIL & ENGELHARD)

1440 THE WETLAND DELINEATION ACTIVITY ALONG THE FORMER ENGELHARD PORTION OF PIERSON'S CREEK (400 DELANCEY ST) HAS BEEN COMPLETED BY WESTON (MARK JANOWSKI – WETLANDS SCIENTIST AND GERRY GILLIGANS – PM)

SUMMARY: THERE IS A SMALL FRINGE WETLAND, AT THE BASE OF A STEEP SLOPE, ALONG THE EAST EDGE OF PIERSON'S CREEK FROM CONRAIL PROPERTY NORTH ACROSS THE ~~429~~ 400 DELANCEY PROPERTY TO DELANCEY ST. (DELINEATED BY FLAG LOCATIONS F-1 TO F-14). THERE ARE ALSO SMALL WETLAND FRINGE AREAS ALONG WEST SIDE OF (OVER)

10/18/12 Rain in the Rain

10/18/12

SUMMARY (CONT'd):

THE CREEK ALONG THIS PORTION, AND ALONG BOTH SIDES OF CREEK ALONG THE CONTINENTAL HARDWARE PORTION OF CREEK NORTH OF DELANCEY ST – THIS ASSESSMENT IS BASED ON VISUAL OBSERVATION AND COMPARISON TO DELINEATED AREA.

WETLAND SOILS/HYDROLOGY/VEGETATION WERE CONFIRMED AT LOCATIONS SB-1, SB-4, AND SB-7, AND THE EDGE OF THE WETLAND WAS CONFIRMED AT LOCATION SB-9 (SEE DATA FORMS). FLAG LOCATIONS F-1 TO F-14 DELINEATED THE EDGE OF THE WETLAND ALONG THE CREEK. SOIL BORING LOCATIONS SB-2, SB-3, SB-5, SB-6, AND SB-8 SHOWED THE ~~STEEP~~ UPLAND AREAS JUST UPSLOPE FROM THE WETLAND (EMERGENT).

WESTON TO RETURN TO RECORD SOIL BORING AND FLAG LOCATIONS W/ GPS.

GIG

10/18/12

PIERSON'S CREEK 10/22/12

1000 DAN CARLSON (DC) AND GERRY GILLILAND (GG) ~~ARRIVED~~ ON SITE TO RECORD THE SOIL BORING AND FLAG LOCATIONS W/ TRIMBLE PRO-GPS. (SEE PRIMARY LOGBOOK FOR ADDITIONAL INFO)

1230 WE WERE ABLE TO LOG ALL FLAG LOCATIONS F-1 TO F-14 DELINEATING EDGE OF WETLAND. WE LOGGED SOIL BORING LOCATIONS SB-1 TO SB-4 AND SB-6 TO SB-9; WE COULD NOT LOCATE THE FLAG FOR SB-5. THE GENERAL LOCATION OF SB-5 WAS MIDWAY BETWEEN SB-4 AND SB-6. END WETLANDS DELINEATION ACTIVITY.

GIG

10/22/12

SB-1
(Wetland area near Creek)

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD[1]

Field Investigator(s): Mark Jaworski, C. Gilliland Date: 10/18/12
Project/Site: Pierson's Creek State: NJ County: Essex
Applicant/Owner: _____ Plant Community #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
Yes _____ No X (If no, explain on back)
Has the vegetation, soils, and/or hydrology been significantly disturbed?
Yes X No _____ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. Mulberry Tree	FACU	C	11.		
2. Phragmites	FACW	SC	12.		
3.			13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC _____
Is the hydrophytic vegetation criterion met? Yes X No _____
Rationale: >50% FACW

SOILS

Series/phase: Urban Subgroup:[2] _____
Is the soil on the hydric soils list? Yes _____ No X Undetermined _____
Is the soil a Histosol? Yes X No _____ Histic epipedon present? Yes _____ No X
Is the soil: Mottled? Yes _____ No X Gleyed? Yes _____ No X
Matrix Color: See Attached Mottle Colors: _____
Other hydric soil indicators: Soil saturated @ 14"
Is the hydric soil criterion met? Yes X No _____
Rationale: Soil saturated & low side encountered at 14"

HYDROLOGY

Is the ground surface inundated? Yes _____ No X Surface water depth: _____
Is the soil saturated? Yes _____ No X
Depth to free-standing water in pit/soil probe hole: 16" - 18"
List other field evidence of surface inundation or soil saturation.
Watermarks, drift lines, sediment deposits (See Attached)
Is the wetland hydrology criterion met? Yes X No _____
Rationale: See Attached

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes X No _____
Rationale for jurisdictional decision: Vegetation, Soil + Hydrology Criteria met

[1] This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.
[2] Classification according to "Soil Taxonomy."

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

SB-1
(wetland sb. is near creek)

Project/Site: Pierson's Creek, Newark, NJ Applicant/Owner: Investigator:	Date: 10/18/12 County: State:
Do Normal Circumstances Exist on the site? Yes (No) Is the site significantly disturbed (Atypical Situation)? (Yes) No Is the area a potential Problem Area? Yes (No) (If needed, explain on reverse.)	Community ID: Transect ID: Plot ID:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Mulberry tree	C	FACU	9.		
2. phragmites	SC	FACW	10.		
3. weed			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). >50%

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
___ Stream, Lake, or Tide Gauge
___ Aerial Photographs
___ Other
___ No Recorded Data Available

Field Observations:
Depth of Surface Water: 16"-18" (in.)
Depth to Free Water in Pit: 16"-18" (in.)
Depth to Saturated Soil: Same (in.)

Wetland hydrology Indicators:
Primary Indicators:
___ Inundated 16"-18"
X Saturated in Upper 12 Inches (Low tide)
X Water Marks
X Drift Lines
X Sediment Deposits
X Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
___ Oxidized Root Channels in Upper 12"
___ Water-Stained Leaves
___ Local Soil Survey Data
___ FAC-Neutral Test
X Other (Explain in Remarks) 4' from surface water

Remarks:

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____

Field Observations

Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6	A	10yr 4/1	NA		silty clay
6-12	A	10yr 2/1	NA		clayey silt w/ veg.
12-18	A	10yr 4/1	NA		clayey silt w/ veg

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- X Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks: saturated soils @ around 14", water @ 16-18" @ lower end of tide

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)
Wetland Hydrology Present? (Yes) No
Hydric Soils Present? (Yes) No

(Circle)
Is this Sampling Point Within a Wetland? (Yes) No

Remarks:

Approved by HQUSACE 3/92

SB-2
Upland area NEAR Creek

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD[1]

Field Investigator(s): Mark Jaworski, G. Gilliland Date: 10/18/12
Project/Site: Pierson's Creek State: NJ County: Essex
Applicant/Owner: Plant Community #/Name:
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
Yes ____ No X (If no, explain on back) Significant historic filling and channel straightening
Has the vegetation, soils, and/or hydrology been significantly disturbed?
Yes X No ____ (If yes, explain on back) See above

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. Black Cherry	FACU	C	11.		
2. Phragmites	FACW	SC	12.		
3. Bamboo spp.	FAC	SC	13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC <50%
Is the hydrophytic vegetation criterion met? Yes ____ No X
Rationale: less than 50% of dominant species are obl, FACW, or FAC (mostly Black cherry)

SOILS

Series/phase: Urban Subgroup:[2] 0-6" 10 R 3/4
Is the soil on the hydric soils list? Yes ____ No X Undetermined X
Is the soil a Histosol? Yes ____ No X Histic epipedon present? Yes ____ No X
Is the soil: Mottled? Yes ____ No X Gleyed? Yes ____ No X
Matrix Color: See Attached Mottle Colors:
Other hydric soil indicators:
Is the hydric soil criterion met? Yes ____ No X
Rationale: See Attached soil description

HYDROLOGY

Is the ground surface inundated? Yes ____ No X Surface water depth:
Is the soil saturated? Yes ____ No X
Depth to free-standing water in pit/soil probe hole: NA
List other field evidence of surface inundation or soil saturation.

Is the wetland hydrology criterion met? Yes ____ No X
Rationale:

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes ____ No X
Rationale for jurisdictional decision: wetland criteria not satisfied Sampling point @ top of tidal channel approx. 8-9' above Pierson's Creek

[1] This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.
[2] Classification according to "Soil Taxonomy."

SB-2
Upland area next to creek

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Peirson's Creek, Newark, NJ
Applicant/Owner:
Investigator:
Date: 6/18/12
County:
State:

Do Normal Circumstances Exist on the site?	Yes	(No)	Community ID:
Is the site significantly disturbed (Atypical Situation)?	(Yes)	No	Transect ID:
Is the area a potential Problem Area? (If needed, explain on reverse.)	Yes	(No)	Plot ID:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Black cherry	C	FACU	9.		
2. phragmites	SC	FACW	10.		
3. Bamboo	SC	FAC	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). <50%

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other

___ No Recorded Data Available

Field Observations:
- Depth of Surface Water: ~~Root Zone~~ (in.) NA
- Depth to Free Water in Pit: _____ (in.) NA
- Depth to Saturated Soil: _____ (in.) NA

Wetland hydrology Indicators:
Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12"
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____

Field Observations
Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6"	A	10R 3/4	N/A		dry silty loam, some gravel
6-12"	A	10R 3/4	NA		dry silty loam some gravel
12-18"	A	10R 3/4	NA		dry silty loam w/ increasing gravel

Hydric Soil Indicators:

___ Histosol
___ Histic Epipedon
___ Sulfidic Odor
___ Aquic Moisture Regime
___ Reducing Conditions
___ Gleyed or Low-Chroma Colors
___ Concretions
___ High Organic Content in Surface Layer Sandy Soils
___ Organic Streaking in Sandy Soils
___ Listed on Local Hydric Soils List
___ Listed on National Hydric Soils List
___ Other (Explain in Remarks)

Remarks: Dry, high chroma, some gravel w/ depth

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Yes	(No)	(Circle)
Wetland Hydrology Present?	Yes	(No)	
Hydric Soils Present?	Yes	(No)	
Is this Sampling Point Within a Wetland?	Yes	(No)	(Circle)

Remarks: Sampling point at top of tidal channel bank about 8'-9' above creek

Approved by HQUSACE 3/92

SB-3

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD[1]

Field Investigator(s): Mark Jaworsky, G. Gilliland Date: 10/18/14
Project/Site: Pierson's Creek State: NJ County: Essex
Applicant/Owner: _____ Plant Community #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
Yes _____ No X (If no, explain on back) historical filling, straightened channel
Has the vegetation, soils, and/or hydrology been significantly disturbed?
Yes X No _____ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. Bamboo spp	FAC	SC	11.		
2. Phragmites	FACW	SC	12.		
3. Black cherry	FACU	C	13.		
4. Tree of Heaven	FACU	C	14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC < 50%
Is the hydrophytic vegetation criterion met? Yes _____ No X
Rationale: _____

SOILS

Series/phase: Urban Subgroup:[2] _____
Is the soil on the hydric soils list? Yes _____ No X Undetermined X
Is the soil a Histosol? Yes _____ No X Histic epipedon present? Yes _____ No X
Is the soil: Mottled? Yes _____ No X Gleyed? Yes _____ No X
Matrix Color: See Attached Mottle Colors: _____
Other hydric soil indicators: _____
Is the hydric soil criterion met? Yes _____ No X
Rationale: Augered to 18" BLS. Soil was dry w/ no mottling. See Attached Soil Log.

HYDROLOGY

Is the ground surface inundated? Yes _____ No X Surface water depth: _____
Is the soil saturated? Yes _____ No X
Depth to free-standing water in pit/soil probe hole: 4'
List other field evidence of surface inundation or soil saturation.
_____
Is the wetland hydrology criterion met? Yes _____ No X
Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes _____ No X
Rationale for jurisdictional decision: the wetland boundary line is approx. 2 toward Pierson's Creek from the SB-3 location

[1] This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.
[2] Classification according to "Soil Taxonomy."

SB-3

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Pierson's Creek, Newark, NJ Applicant/Owner: _____ Investigator: _____	Date: 10/18/12 County: _____ State: _____
Do Normal Circumstances Exist on the site? Yes (No) Is the site significantly disturbed (Atypical Situation)? (Yes) No Is the area a potential Problem Area? Yes (No) (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Bamboo	SC	FAC	9.		
2. Phragmites	SC	FACW	10.		
3. Cherry	SC	FACU	11.		
4. Tree of Heaven	C	FACU	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). <50%

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

___ No Recorded Data Available

Field Observations:
- Depth of Surface Water: 4' (in.)
- Depth to Free Water in Pit: NA (in.)
- Depth to Saturated Soil: NA (in.)

Wetland hydrology Indicators:
Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12 Inches
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12"
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: augered to 18". Soil was dry w/ no mottling although some fill materials encountered

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6	A	10YR 2/1	NA		loamy dry w/some clay near bottom
6-12	A	10YR 2/1	NA		loamy dry (no clay)
12-18	A	same	same		same

Hydric Soil Indicators:

___ Histosol
___ Histic Epipedon
___ Sulfidic Odor
___ Aquic Moisture Regime
___ Reducing Conditions
___ Gleyed or Low-Chroma Colors
___ Concretions
___ High Organic Content in Surface Layer Sandy Soils
___ Organic Streaking in Sandy Soils
___ Listed on Local Hydric Soils List
___ Listed on National Hydric Soils List
___ Other (Explain in Remarks)

Remarks: see hydrology summary. steep slope near tidal channel

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes (No) (Circle)
Wetland Hydrology Present? Yes (No)
Hydric Soils Present? Yes (No)

(Circle)
Is this Sampling Point Within a Wetland? Yes (No)

Remarks: the wetland line is about 2' toward the tidal channel from the SB-3 location

Approved by HQUSACE 3/92

SB-4
(~2' From Creek)

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD[1]

Field Investigator(s): Mark Jaworski, G. Gilliland Date: 10/18/12
Project/Site: Pierson's Creek State: NJ County: Essex
Applicant/Owner: _____ Plant Community #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
Yes _____ No X (If no, explain on back) Filled lands and straightened channel
Has the vegetation, soils, and/or hydrology been significantly disturbed?
Yes X No _____ (If yes, explain on back) Numerous invasive species

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. Phragmites	FACW	SC	11.		
2. Black cherry	FACU	C	12.		
3. Bamboo spp.	FAC	SC	13.		
4. Tree of Heaven	FACU	C	14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC >50% (Phragmites)
Is the hydrophytic vegetation criterion met? Yes X No _____
Rationale: >50% FACW

SOILS

Series/phase: Urban Subgroup:[2] _____
Is the soil on the hydric soils list? Yes _____ No X Undetermined _____
Is the soil a Histosol? Yes X No _____ Histic epipedon present? Yes _____ No X
Is the soil: Mottled? Yes _____ No X Gleyed? Yes _____ No X
Matrix Color: See Attached Mottle Colors: _____
Other hydric soil indicators: _____
Is the hydric soil criterion met? Yes X No _____
Rationale: Low Chroma & see hydrology

HYDROLOGY

Is the ground surface inundated? Yes _____ No X Surface water depth: _____
Is the soil saturated? Yes X No _____
Depth to free-standing water in pit/soil probe hole: 15"
List other field evidence of surface inundation or soil saturation.
Soil Saturation w/in 12", water marks, drift lines (see Attached)
Is the wetland hydrology criterion met? Yes X No _____
Rationale: Numerous hydrology features documented

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes X No _____
Rationale for jurisdictional decision: Sample location was within lower portion of the tidal channel that is inundated during high tide cycle

[1] This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.
[2] Classification according to "Soil Taxonomy."

SB-4

WAYPOINT 3 ~ 2' from creek

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Pierson's Creek, NEWARK, NJ — Date: 10/18/12
Applicant/Owner: — County:
Investigator: — State:

Do Normal Circumstances Exist on the site? Yes (No)
Is the site significantly disturbed (Atypical Situation)? (Yes) No
Is the area a potential Problem Area? Yes (No)
(If needed, explain on reverse.)

Community ID:
Transect ID:
Plot ID:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. phragmites	SC	FACW	9.		
2. cherry	C	FACU	10.		
3. Bamboo	SC	FAC	11.		
4. Tree of Heaven	C	FACU	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). >50% (phragmites)

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
___ Stream, Lake, or Tide Gauge
___ Aerial Photographs
___ Other
___ No Recorded Data Available

Field Observations:
Depth of Surface Water: 2" (in.)
Depth to Free Water in Pit: 15" (in.)
Depth to Saturated Soil: at surface 12"

Wetland hydrology Indicators:
Primary Indicators:
___ Inundated
X Saturated in Upper 12 Inches
X Water Marks
X Drift Lines
X Sediment Deposits
X Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
___ Oxidized Root Channels in Upper 12"
X Water-Stained Leaves
___ Local Soil Survey Data
___ FAC-Neutral Test
___ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6		10YR 2/1			clayey silt w/ organic mat
6-12		10YR 2/1			

Hydric Soil Indicators:

___ Histosol
___ Histic Epipedon
___ Sulfidic Odor
___ Aquic Moisture Regime
___ Reducing Conditions
___ Gleyed or Low-Chroma Colors
___ Concretions
___ High Organic Content in Surface Layer Sandy Soils
___ Organic Streaking in Sandy Soils
___ Listed on Local Hydric Soils List
___ Listed on National Hydric Soils List
___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	(Yes)	No	(Circle)
Wetland Hydrology Present?	(Yes)	No	
Hydric Soils Present?	(Yes)	No	
Is this Sampling Point Within a Wetland?	(Yes)	No	(Circle)

Remarks: Sample location was within lower portion of the tidal channel that definitely is inundated during the high tide cycle

SB-5
(approx. 6' From creek along steep bank)

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD[1]

Field Investigator(s): Mark Jaworski, G. Gilliland Date: 10/18/12
Project/Site: Piercy Creek State: NJ County: Essex
Applicant/Owner: _____ Plant Community #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
Yes ____ No X (If no, explain on back)
Has the vegetation, soils, and/or hydrology been significantly disturbed?
Yes X No ____ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. Bamboo spp.	FAC	SC	11.		
2.			12.		
3.			13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC 100 %
Is the hydrophytic vegetation criterion met? Yes X No ____
Rationale: 100% FAC

SOILS

Series/phase: Urban Subgroup:[2] _____
Is the soil on the hydric soils list? Yes ____ No X Undetermined _____
Is the soil a Histosol? Yes ____ No X Histic epipedon present? Yes ____ No X
Is the soil: Mottled? Yes X No ____ Gleyed? Yes ____ No X
Matrix Color: See Attached Mottle Colors: _____
Other hydric soil indicators: _____
Is the hydric soil criterion met? Yes ____ No X
Rationale: See Attached

HYDROLOGY

Is the ground surface inundated? Yes ____ No X Surface water depth: _____
Is the soil saturated? Yes ____ No X
Depth to free-standing water in pit/soil probe hole: _____
List other field evidence of surface inundation or soil saturation.

Is the wetland hydrology criterion met? Yes ____ No X
Rationale: See Attached

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes ____ No X
Rationale for jurisdictional decision: _____

[1] This date form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.
[2] Classification according to "Soil Taxonomy."

SB-5
~6' From creek on bank

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Pierson's Creek, Newark, NJ Applicant/Owner: _____ Investigator: _____	Date: 10/18/12 County: _____ State: _____
Do Normal Circumstances Exist on the site? Yes (No) Is the site significantly disturbed (Atypical Situation)? (Yes) No Is the area a potential Problem Area? Yes (No) (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Bamboo	SC	FAC	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 100%

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

___ No Recorded Data Available

Field Observations:
- Depth of Surface Water: 4-5' (In.)
- Depth to Free Water in Pit: _____ (in.)
- Depth to Saturated Soil: _____ (in.)

Wetland hydrology Indicators:
Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12 inches
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12"
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

S

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6		10YR 2/2	NA		Dry Non-plastic loam
6-12		10YR 2/2	NA		
12-18		10YR 2/2	5YR 5/8	5%	Some (mottles at bottom)

some wood debris + gravel

Hydric Soil Indicators:

___ Histosol
___ Histic Epipedon
___ Sulfidic Odor
___ Aquic Moisture Regime
___ Reducing Conditions
___ Gleyed or Low-Chroma Colors
___ Concretions
___ High Organic Content in Surface Layer Sandy Soils
___ Organic Streaking in Sandy Soils
___ Listed on Local Hydric Soils List
___ Listed on National Hydric Soils List
___ Other (Explain in Remarks)

Remarks: Minor (<5%) mottles w/ fill material. Soil was dry and non-plastic

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)
Wetland Hydrology Present? Yes (No)
Hydric Soils Present? Yes (No)

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks: Although relatively far down the slope of the creek, wetland soil + hydrology indicators not present

SB-6 (location approx 20' upland of Odell creek, 6' above water line

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD[1]

Field Investigator(s): Mark Jaworek, G. G. Hilland Date: 6/18/12
Project/Site: Pierson's Creek State: ND County: Essex
Applicant/Owner: _____ Plant Community #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
Yes ____ No X (If no, explain on back)
Has the vegetation, soils, and/or hydrology been significantly disturbed?
Yes X No ____ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. Tree of Heaven	FACU	C	11.		
2. Bamboo	FAC	SC	12.		
3.			13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC < 50%
Is the hydrophytic vegetation criterion met? Yes ____ No X
Rationale: Area generally cleared of vegetation

SOILS

Series/phase: Urban Subgroup:[2] _____
Is the soil on the hydric soils list? Yes ____ No X Undetermined _____
Is the soil a Histosol? Yes ____ No X Histic epipedon present? Yes ____ No X
Is the soil: Mottled? Yes ____ No X Gleyed? Yes ____ No X
Matrix Color: See Attached Mottle Colors: _____
Other hydric soil indicators: _____
Is the hydric soil criterion met? Yes ____ No X
Rationale: Dry upland soil

HYDROLOGY

Is the ground surface inundated? Yes ____ No X Surface water depth: Approx. 7' below creek bank
Is the soil saturated? Yes ____ No X
Depth to free-standing water in pit/soil probe hole: N/A
List other field evidence of surface inundation or soil saturation.

Is the wetland hydrology criterion met? Yes ____ No X
Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes ____ No X
Rationale for jurisdictional decision: Upland, cleared area approx. 25' from creek

[1] This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.
[2] Classification according to "Soil Taxonomy."

SB-6
(20' Away From tidal Creek)

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Pierson's Creek, Newark, NJ Applicant/Owner: Investigator:	Date: 10/16/12 County: State:
Do Normal Circumstances Exist on the site? Yes (No) Is the site significantly disturbed (Atypical Situation)? (Yes) No Is the area a potential Problem Area? Yes (No) (If needed, explain on reverse.)	Community ID : Transect ID: Plot ID:

upland Area ~6' Above water line

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. tree of heaven	C	FACU	9.		
2. Bamboo	SC	FAC	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). <50%

Remarks: Area generally cleared of vegetation

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other

___ No Recorded Data Available

Field Observations:
- Depth of Surface Water: NA (in.)
- Depth to Free Water in Pit: NA (in.)
- Depth to Saturated Soil: NA (in.)

Wetland hydrology Indicators:
Primary Indicators:
- ____ Inundated
- ____ Saturated in Upper 12 Inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ____ Oxidized Root Channels in Upper 12"
- ____ Water-Stained Leaves
- ____ Local Soil Survey Data
- ____ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: Very Dry - at least 6-7' above creek.

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6		No recovery			
6-12	C	10YR 3/3			dry sand w/ gravel + debris
12-18		same			same

Hydric Soil Indicators:

___ Histosol
___ Histic Epipedon
___ Sulfidic Odor
___ Aquic Moisture Regime
___ Reducing Conditions
___ Gleyed or Low-Chroma Colors
___ Concretions
___ High Organic Content In Surface Layer Sandy Soils
___ Organic Streaking in Sandy Soils
___ Listed on Local Hydric Soils List
___ Listed on National Hydric Soils List
___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes (No) (Circle)
Wetland Hydrology Present? Yes (No)
Hydric Soils Present? Yes (No)

(Circle)
Is this Sampling Point Within a Wetland? Yes No

Remarks: upland area on top of creek bank

Approved by HQUSACE 3/92

SB-7
Approx. 3' From Creek

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD[1]

Field Investigator(s): Mark Jaworski, G. Gilliland Date: 10/18/12
Project/Site: Pierson's Creek State: NJ County: Essex
Applicant/Owner: _____ Plant Community #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
Yes _____ No X (If no, explain on back)
Has the vegetation, soils, and/or hydrology been significantly disturbed?
Yes X No _____ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. Bamboo spp	FAC	SC	11.		
2. Tree of Heaven	FACU	C	12.		
3.			13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC >50%
Is the hydrophytic vegetation criterion met? Yes X No _____
Rationale: Vegetation was almost all bamboo spp. (FAC)

SOILS

Series/phase: Urban Subgroup:[2] _____
Is the soil on the hydric soils list? Yes _____ No X Undetermined _____
Is the soil a Histosol? Yes _____ No X Histic epipedon present? Yes _____ No X
Is the soil: Mottled? Yes X No _____ Gleyed? Yes _____ No X
Matrix Color: See Attached Mottle Colors: 7.5 yr 3/4
Other hydric soil indicators: _____
Is the hydric soil criterion met? Yes X No _____
Rationale: Saturated soil w/ mottles 6-12"

HYDROLOGY

Is the ground surface inundated? Yes _____ No X Surface water depth: 2' below sampling location
Is the soil saturated? Yes _____ No X
Depth to free-standing water in pit/soil probe hole: 12"
List other field evidence of surface inundation or soil saturation.

Is the wetland hydrology criterion met? Yes X No _____
Rationale: water marks, water stained leaves, saturated soils w/in 12".

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes X No _____
Rationale for jurisdictional decision: _____

[1] This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.
[2] Classification according to "Soil Taxonomy."

SB 7
3' from Creek

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Pierson's Creek, Newark, NJ Applicant/Owner: Investigator:	Date: 10/18/12 County: State:
Do Normal Circumstances Exist on the site? Yes (No) Is the site significantly disturbed (Atypical Situation)? (Yes) No Is the area a potential Problem Area? Yes (No) (If needed, explain on reverse.)	Community ID: Transect ID: Plot ID:

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Bamboo	SC	FAC	9.		
2. Tree of Heaven	C	FACU	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). 75%

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
___ Stream, Lake, or Tide Gauge
___ Aerial Photographs
___ Other
___ No Recorded Data Available

Field Observations:
Depth of Surface Water: 2' (in.)
Depth to Free Water in Pit: N/A (in.)
Depth to Saturated Soil: 12" (in.)

Wetland hydrology Indicators:
Primary Indicators:
___ Inundated
X Saturated in Upper 12 Inches
X Water Marks
___ Drift Lines
___ Sediment Deposits
___ Drainage Patterns in Wetlands
Secondary Indicators (2 or more required):
___ Oxidized Root Channels in Upper 12"
X Water-Stained Leaves
___ Local Soil Survey Data
___ FAC-Neutral Test
___ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____

Field Observations

Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6"	A	10YR 2/1			moist loam, trace Si/clay (wood
6-12"	A	10YR 2/1	2.5YR 3/4		plastic, wet loam, trace Si/clay

Rhizome in 6-12
12-18
wood chip

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ___ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface Layer Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)
Wetland Hydrology Present? (Yes) No
Hydric Soils Present? (Yes) No

Is this Sampling Point Within a Wetland? (Yes) No (Circle)

Remarks:

SB-8
(5' From Creek on Steep Slope)

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD[1]

Field Investigator(s): Marc Jaworski, L. Grillo Date: 10/18/12
Project/Site: Pierson's Creek State: NJ County: Essex
Applicant/Owner: _____ Plant Community #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
Yes ____ No X (If no, explain on back)
Has the vegetation, soils, and/or hydrology been significantly disturbed?
Yes X No ____ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. Phragmites	FACW	SC	11.		
2. mulberry tree	FACU	T	12.		
3.			13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC < 50%
Is the hydrophytic vegetation criterion met? Yes ____ No X
Rationale: FACU > 50%

SOILS

Series/phase: Urban Subgroup:[2] _____
Is the soil on the hydric soils list? Yes ____ No X Undetermined ____
Is the soil a Histosol? Yes ____ No X Histic epipedon present? Yes ____ No X
Is the soil: Mottled? Yes ____ No X Gleyed? Yes ____ No X
Matrix Color: See Attached Mottle Colors: _____
Other hydric soil indicators: _____
Is the hydric soil criterion met? Yes ____ No X
Rationale: Upland, dry soil (see attached)

HYDROLOGY

Is the ground surface inundated? Yes ____ No X Surface water depth: _____
Is the soil saturated? Yes ____ No X
Depth to free-standing water in pit/soil probe hole: not encountered
List other field evidence of surface inundation or soil saturation.

Is the wetland hydrology criterion met? Yes ____ No X
Rationale: Dry steep Creek bank

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes ____ No X
Rationale for jurisdictional decision: Dry steep Creek bank

[1] This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.
[2] Classification according to "Soil Taxonomy."

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

SB-8
5' from Creek on steep bank

Project/Site: Pierson's Creek, Newark, NJ Applicant/Owner: _____ Investigator: _____	Date: 10/18/12 County: _____ State: _____
Do Normal Circumstances Exist on the site? Yes (No) Is the site significantly disturbed (Atypical Situation)? (Yes) No Is the area a potential Problem Area? Yes (No) (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Phragmites	S.C	FACW	9.		
2. Mulberry tree	C	FACU	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). < 50%

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

___ No Recorded Data Available

Field Observations:

Depth of Surface Water:	5	(in.)
Depth to Free Water in Pit:	NA	(in.)
Depth to Saturated Soil:	NA	(in.)

Wetland hydrology Indicators:
Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12 Inches
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12"
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks: Dry steep creek bank (near bridge) Normal Parameters

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____

Field Observations
Taxonomy (Subgroup): _____ Confirm Mapped Type? Yes No

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6"	A	10YR-2/2	NA		Dry Loam, trace gravel
6-12"	A	" Same			Same
12-18"	A	Same			Same

Hydric Soil Indicators:

___ Histosol
___ Histic Epipedon
___ Sulfidic Odor
___ Aquic Moisture Regime
___ Reducing Conditions
___ Gleyed or Low-Chroma Colors
___ Concretions
___ High Organic Content in Surface Layer Sandy Soils
___ Organic Streaking in Sandy Soils
___ Listed on Local Hydric Soils List
___ Listed on National Hydric Soils List
___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes (No) (Circle)
Wetland Hydrology Present? Yes (No)
Hydric Soils Present? Yes (No)

(Circle)
Is this Sampling Point Within a Wetland? Yes (No)

Remarks: Dry steep creek bank

Approved by HQUSACE 3/92

SB-9
40'-50' away from creek
near southern culvert
entrance

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD[1]

Field Investigator(s): Mark Jakubowski, A. Gilliland Date: 10/18/12
Project/Site: Picosa Creek State: NJ County: Essex
Applicant/Owner: _____ Plant Community #/Name: _____
Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
Yes ____ No X (If no, explain on back)
Has the vegetation, soils, and/or hydrology been significantly disturbed?
Yes X No ____ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. Phragmites	FACW	SC	11.		
2. Tree of Heaven	FACU	C	12.		
3. Catawba Tree	FACU	C	13.		
4.			14.		
5.			15.		
6.			16.		
7.			17.		
8.			18.		
9.			19.		
10.			20.		

Percent of dominant species that are OBL, FACW, and/or FAC <50%
Is the hydrophytic vegetation criterion met? Yes ____ No X
Rationale: _____

SOILS

Series/phase: Urban Subgroup:[2] _____
Is the soil on the hydric soils list? Yes ____ No X Undetermined ____
Is the soil a Histosol? Yes ____ No X Histic epipedon present? Yes ____ No X
Is the soil: Mottled? Yes X No ____ Gleyed? Yes ____ No X
Matrix Color: See Attached Mottle Colors: _____
Other hydric soil indicators: _____
Is the hydric soil criterion met? Yes X No ____
Rationale: Extensive Mottling (>20%) would indicate water table elevates to create hydric conditions

HYDROLOGY

Is the ground surface inundated? Yes ____ No X Surface water depth: N/A
Is the soil saturated? Yes ____ No X
Depth to free-standing water in pit/soil probe hole: See Attached
List other field evidence of surface inundation or soil saturation.

Is the wetland hydrology criterion met? Yes ____ No X
Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes X No X
Rationale for jurisdictional decision: This location was the wetland/upland boundary

[1] This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.
[2] Classification according to "Soil Taxonomy."

SB-9
40-50' away from creek

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Pierson's Creek, Newark, NJ Applicant/Owner: _____ Investigator: _____	Date: 10/18/12 County: _____ State: _____
Do Normal Circumstances Exist on the site? Yes (No) Is the site significantly disturbed (Atypical Situation)? (Yes) No Is the area a potential Problem Area? Yes (No) (If needed, explain on reverse.)	Community ID: _____ Transect ID: _____ Plot ID: _____

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Phragmites	S C	FACW	9.		
2. tree of heaven	C	FACU	10.		
3. "mowing cigar"	C	FACU	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-). < 50%

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake, or Tide Gauge
- ___ Aerial Photographs
- ___ Other

___ No Recorded Data Available

Field Observations:
- Depth of Surface Water: N/A (in.)
- Depth to Free Water in Pit: N/A (in.)
- Depth to Saturated Soil: N/A (in.)

Wetland hydrology Indicators:
Primary Indicators:
- ___ Inundated
- ___ Saturated in Upper 12 Inches
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ___ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ___ Oxidized Root Channels in Upper 12"
- ___ Water-Stained Leaves
- ___ Local Soil Survey Data
- ___ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:
Soil was moist @ 14" but never saturated.

SOILS

Map Unit Name
(Series and Phase): _____ Drainage Class: _____

Taxonomy (Subgroup): _____ Field Observations
Confirm Mapped Type? Yes No

Profile Description:

Depth (Inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6	A	10YR 2/2	7.5YR 4/6	10-15%	loam, trace silt, moist
6-10"	A	10YR 2/2	N/A	NA	
10-12	A	10YR 2/1	NA	NA	loam, trace silt, moist
12-14		same			
14-18	A	10YR 2/2	7.5YR 4/6	20%	loam, trace silt, moist trace gravel

Hydric Soil Indicators:

___ Histosol
___ Histic Epipedon
___ Sulfidic Odor
___ Aquic Moisture Regime
___ Reducing Conditions
___ Gleyed or Low-Chroma Colors
___ Concretions
___ High Organic Content in Surface Layer Sandy Soils
___ Organic Streaking in Sandy Soils
___ Listed on Local Hydric Soils List
___ Listed on National Hydric Soils List
___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

wetland boundary

Hydrophytic Vegetation Present? Yes (No) (Circle)
Wetland Hydrology Present? (Yes) No
Hydric Soils Present? (Yes) No

Is this Sampling Point Within a Wetland? (Circle) (Yes) No

Remarks:

Wetland boundary, lots of redox/mottling @ 14" and lower

Approved by HQUSACE 3/92

APPENDIX C

NAME AND QUALIFICATIONS OF PREPARER

MARK S. JAWORSKI

Qualifications Summary

- Over 20 years of professional experience.
- Experience in performing natural resource inventories and identifying habitat creation, restoration, and enhancement projects to improve degraded ecological conditions.
- Endangered Species surveys and placement of wetland boundaries.
- Development of GIS-based site selection models.
- Management of permit assembly at local, county, state, and federal levels, including stream encroachment permits, NPDES permits, WQCs, and erosion and sediment control plans.

Fields of Competence

Twenty years of experience in performing and managing wetland delineations, natural resource assessments, endangered species surveys, wetland restorations, ecological assessments, and mitigation banking projects. Extensive experience in the ecological restoration of impaired habitats, dredged material sites, and the development of wetland mitigation plans and specifications. Developed and implemented several natural resource management projects in the Northeast and has managed construction of wetland mitigation sites. Prepared several types of local, state, and federal permits and has performed numerous **wetland delineations**, and natural resource inventories sensitive habitats.

Credentials

B.S. Environmental Science—Stockton College (1990)
Hazardous Waste Operations Supervisors Training
Department of Transportation HM 181 & 126F Certification
Hydric Soils Certification
New Jersey Assembly Resolution for Environmental Accomplishment (1990)
Stockton State College Environmental Accomplishment Award (1990)
Youth Environmental Society Education Award (1990)
Atlantic Audubon Environmental Education Award (1990)
NJ DEP Endangered and Nongame Species Grant (1990)
National Recycling Coalition Award and Scholarship (1989)

Employment History

2001-Present Weston Solutions, Inc.
1999-2001 The IT Group
1991-1999 ICF Kaiser Environment & Facilities Group

Key Projects

Mitigation Banking

Project Manager, Chimento Wetland Mitigation Bank, Little Silver, NJ. Construction of a 20-acre tidal wetland mitigation bank along Shrewsbury River in Monmouth County, NJ.. Worked closely with the mitigation bank owner, U.S. Wetlands, Inc., to meet an aggressive 1-year construction schedule. This included conducting **wetland delineations,** securing approval of the work from the New Jersey Freshwater Mitigation Council, obtaining the necessary NJDEP permits, and procuring specialized and licensed contractors for the eradication of *Phragmites australis.* This species is an invasive plant that develops monotypic stands, often providing limited habitat or food sources for wildlife that inhabit or migrate along New Jersey's coastal environment. The project also includes revegetating the entire site with wetland plant species native to the Shrewsbury River ecosystem, which borders the parcel of land to the south.

Project Manager, Newark Wetland Mitigation and Conservation Bank, Newark, NJ. Established innovative 20 acre wetland mitigation site on one of last remain tidal wetlands in Newark Bay. This site is one of many that will be incorporated into the final version of the USACE's *Hudson-Raritan Estuary Comprehensive Restoration Plan (CRP)*.Development of the project will provide Newark a sustainable and green solution by providing the community with credit sale revenue while improving flood storage, water quality, and wildlife habitat. Integrating communications and IRT mitigation bank permitting with almost a dozen project stakeholders including USACE, NOAA, EPA, USFWS and NJDEP. Designed site enhancement improvements for conservation bank component including endangered species habitat for yellow and black crowned night herons. Completed habitat assessments and mapping, **wetland delineation**, preliminary assessment (PA) and other investigations.

Project Manager, Marshes Bog Brook Mitigation Bank, Howell, NJ. Performed site selection, **wetland delineations**, conceptual design, and permit applications for 40-acre freshwater mitigation bank in New Jersey's Watershed Management Area 12. Utilized GIS to evaluate over 25 potential site properties. Negotiated project real estate contracts with landowners on client's behalf. Worked closely with real estate agents, State, County and local governments and conservation groups. Developed detailed business plan demonstrating the economic feasibility of the bank and justifying credit pricing. All work performed in accordance with N.J.A.C 7:7A.

Project Manager, Wyckoff Mills Wetland Mitigation Bank, Monroe Township, NJ. – Project Manager overseeing construction of a 160 acre wetland mitigation bank servicing Watershed Management Areas 10, 11, and 12. Performed construction management and QA/QC inspections during field activities and developed monitoring plan to demonstrate project success.

Key Projects (Continued)

Wetland Delineations and Ecological Assessments

Wetland Delineation, New Jersey, U.S. Environmental Protection Agency. Performed a 10-acre wetland delineation at a Superfund site in the Pinelands of New Jersey using the *New Jersey Pinelands Commission Manual for Identifying and Delineating Pinelands Area Wetlands*, 1991. The wetland areas were composed mostly of swale networks that were vegetated with Pineland grasses. Met with Pineland Commission officials on-site to discuss the positioning of the wetlands boundary and terms for issuance of a Letter of Interpretation (LOI). In weeks following the wetland delineation, also performed benthic surveys along an adjacent river to determine if the site had caused alterations to the benthic populations. Findings were presented in a written report submitted to the client.

Wetland Delineation, U.S. Army, Fort Dix, Burlington County, New Jersey. Identified and **delineated freshwater wetland environments** at the Fort Dix Army Installation, Burlington County, New Jersey. Over 50 acres of wetlands were delineated during the winter months of 1996 using the *New Jersey Pinelands Commission Manual for Identifying and Delineating Pinelands Area Wetlands*, 1991. Completed all of the LOI application requirements and worked with surveyors to expedite the field mapping activities, which were performed using GPS. Also met with Pineland Commission officials in the field to negotiate the placement of the wetland boundary, particularly in "problem area wetlands." Successful in reducing the size of the regulated wetland areas by demonstrating to Pinelands Commission officials that a nonnative fill material caused perched water table conditions in the area, thereby "unnaturally" influencing the hydrologic conditions of the area.

Wetland Delineation, Confidential Client, Maplewood, NJ. Performed a **wetland delineation** on a 3-acre site using the *Federal Manual for Delineating Jurisdictional Wetlands*,1989. Completed the NJDEP application for a LOI in accordance with the procedures outlined in N.J.A.C. 7:7A. The delineation was especially challenging because the site had been planted with nonnative trees originating from varying geographic areas within the continental U.S.

Ecological Survey, Confidential Chemical Manufacturer, Old Bridge, NJ. Performed an ecological survey and **wetland assessment** of a 75-acre parcel of land immediately adjacent to a chemical manufacturing firm. The purpose of the survey was to identify different types of ecological habitats on the parcel, identify the flora and fauna within each habitat identified, assess any ecological impacts caused by releases from the chemical manufacturing plant, and submit a written report documenting observations made during the survey. Identified over 12 species of trees, 16 species of shrubs, and 13 species of herbs. Also identified several mammals by visual observations, foot tracks, or droppings, and identified numerous bird species by visual observations and bird calls.

Ecological Assessments, PPG Industries, Hudson County, New Jersey. Participated in an ecological assessment of the Upper New York Bay in conjunction with

Key Projects (Continued)

the PPG Nonresidential Chromium Remediation Project. Responsible for the collection of surface water and sediment samples from the littoral zones within the project areas, and for identifying flora and fauna observed during the project period. Also characterized tidal water fluctuations within the coastal estuary and assisted in assessing the contaminant impacts to the local ecology.

Baseline Ecological Evaluation, U.S. Army, Camp Kilmer, Edison, NJ. Performed a Baseline Ecological Evaluation (BEE) of a 50-acre parcel of land at a former Army Base. The purpose of the survey was to identify different types of ecological habitats on the parcel, identify the flora and fauna within each habitat identified, assess any ecological impacts caused by releases of chemicals by the facility, and submit a written report documenting observations made during the survey and evaluating potential ecological risks.

Ecological Assessments & Restoration

New Jersey Intracoastal Waterway Ecological Restoration Feasibility Study, USACE, Philadelphia District. Project Manager and supervising restoration scientist for identifying dredge material placement sites, habitat restoration sites, and beneficial reuse options for maintenance dredging of approximately 70 miles of New Jersey's Intracoastal Waterway. Through the identification of dredge material disposal and beneficial reuse sites, developed long-term dredge material placement options. Approximately 25 innovative dredging technologies and sediment processing technologies were evaluated to reduce dredge material quantities and placement site capacity requirements. Major project tasks included evaluation of existing data (such as reports, land use, bathymetry, aerial photographs); **wetlands assessments**, coordination with regulatory agencies including New Jersey Department of Environmental Protection (NJDEP), U.S. Fish and Wildlife Service (USFWS), and National Marine Fisheries Service (NMFS); identification of innovative habitat restoration techniques; and development of detailed site criteria. Responsibilities also included GIS system construction, design, and implementation of additional site studies; ranking of placement and restoration alternatives; and preparation of a high-quality draft and final siting report. Additional data identified and evaluated included historic dredging records, regional demographics, transportation networks, wetlands, endangered species habitat, fisheries data, benthic surveys, sediment chemistry, and water quality data. Successfully identified viable habitat creation, restoration, and enhancement opportunities within each project reach that will improve degraded ecological conditions on historic dredge spoils sites and potentially upgrade water quality in the project area. New techniques such as marsh terracing to raise bay bottom elevations and dredge hole filling to create fisheries wintering habitat were also evaluated and recommended. Developed detailed siting criteria to evaluate expansion and continued use of existing placement areas, and developed a GIS-based site selection model that incorporated multiple site selection criteria simultaneously. Alternatives for each reach were then developed, which included placement site creation and management, site reuse and

Key Projects (Continued)

long-term management, recommendations for modifications to current dredging practices, channel realignment, and activities that could improve existing ecosystem conditions. Other beneficial reuse options, including recreational, construction, and other marketable end-uses, were evaluated, and recommendations made as to their viability.

Environmental Assessment, Pope Air Force Base, North Carolina, AFCEE. As part of an Environmental Assessment (EA) for the Air Force Center for Environmental Excellence (AFCEE), managed development of a stream and wetland mitigation plan to allow construction of a 40-acre "Red Ramp" for loading and unloading of explosive cargo at Pope Air Force Base, NC. The Plan included specifications and design for mitigating 1,010 ft of riverine impacts and 14.4 acres of wetland impacts by constructing 1,125 ft of realigned stream, 3 acres of wetlands, and procuring 29 acres of wetland mitigation credits at Ft. Bragg, NC. To develop the new reach of stream, a reference reach of stream was used to design an ecologically productive stream that would provide beneficial use to aquatic organisms and wildlife, while providing flood control and erosion prevention during storm events. Based on these data, stream cross sections, floodplain, channel slope, meander and belt widths, and vegetative communities were developed. The results of the reference reach survey, including detail measurements, calculations, and drawings, were presented in the **wetlands and stream mitigation plan.** Received praise from the Air Force for plan preparation and for efforts in coordinating communications between several federal and private entities involved with the project, including the Army Corps of Engineers (USACE) Wilmington and Savannah Districts, USAF, U.S. EPA, USFWS, National Oceanic and Atmospheric Administration (NOAA), and several contractors. The project was completed in accordance with the USAF schedule, and resulted in a Finding of No Significant Impacts (FONSI) and issuance of the USACE Section 404 permit.

Ecosystem Restoration Plans, USACE, Louisville Kentucky District. Under contract GS-10F-0048J, managed preparation of several ecosystem Preliminary Restoration Plans authorized under Section 1135 and Section 206 Programs of the Water Resources Development Act of 1986 and 1996, respectively. The purpose of this act is to restore function, structure, and the dynamic relationship to an ecosystem that has been degraded. The project involved a comprehensive examination of the problems contributing to the ecosystem degradation, and the development of alternative means for restoration. Reports prepared included **wetlands assessments**, project plans, associated costs, schedules, feasibility analysis, construction procedures, summary of impacts, cost benefit analysis, and endangered species information. Many of the restoration plans were prepared for 100+ acre strip mine sites consisting of coal refuse, highwalls, pits, ungraded spoil piles, acid mine drainage, and impacted streams. Other plans were prepared for degraded river systems suffering from eroded riverbanks, nonpoint water pollution, and deforested riparian zones. Arranged site visits, supervised scientists and ecologists, and assisted in preparing restoration strategies for these

Key Projects (Continued)

sensitive ecosystems. Efforts resulted in cutting-edge restoration strategies that were cost effective to implement and effective in mitigating the ecological impacts.

Habitat Restoration, King of Prussia Superfund Site. Developed a habitat restoration plan for an 8-acre site following a remedial action at the site, which left the on-site soils unvegetated and stripped of their nutrient and organic content. Determined cost-effective means for replenishing the soil's organic and nutrient content, and assembled a list of native Pineland vegetative species that would be appropriate for site restoration. Areas previously excavated and requiring restoration included approximately 6 acres of upland and 2 acres of wetland environments. Conducted **wetland delineation** and negotiated the wetland restoration requirements during habitat restoration meetings and on-site inspections by the Pinelands Commission, and provided knowledgeable verbal and written comment to the client describing the region's ecosystems. Praised by the client for invaluable input stemming from knowledge of environmentally sensitive areas, which resulted in dramatic improvements and cost savings to the restoration strategy originally proposed by the restoration contractor.

Wetland Mitigation, Ewan Property Site, Shamong Township, New Jersey. Supervised the creation of a 3-acre wetland comprising over 6,000 plants, including two wetland cedar bogs. The plantings were composed of indigenous Pineland plant species. Directed the survey team and earth-moving equipment in a successful effort to grade the area to the appropriate topographical elevations. Supervised all planting activities and utilized a global positioning system (GPS), which incorporates the use of satellites for field mapping purposes. Despite inclement field conditions, directed the operation such that the project was completed on schedule.

Wetland Mitigation, Confidential Client, Reading, PA. Developed a design for a wetland enhancement/mitigation project that involved the closure of two paper sludge settling lagoons at an industrial facility. To avoid the costly excavation, backfilling, and grading of the lagoons, which occupied approximately 3 acres, developed a more cost-effective wetland enhancement strategy that reduced the liability of the open lagoons, satisfied the closure requirements of PADEP, and prevented the off-site disposal of several thousand tons of material filling the lagoons. Prepared FS report demonstrating that the wetlands enhancement strategy was the most effective means of addressing each party's concerns.

Wetlands Permitting

Wetland Permitting Specialist, Columbia Transcom Fiber Optic Cable Project – Permitting Manager for a 400 mile fiber optic cable installation project extending from Washington, D.C. to Cleveland, Ohio. Obtained over 80 separate Soil Erosion, Wetland Crossing, Stream Encroachment, Cultural and Historical Resource, and USACE federal permits. Met with State and Federal regulators on client's behalf. Worked extensively in Pennsylvania within several PADEP permitting managers and prepared and obtained PADEP Water Obstruction & Encroachment & USACE Section 404 Joint Permits. Performed Environmental Assessments, Supplemental PNDI Searches, and SHPO

Key Projects (Continued)

coordination. Worked with permitting managers throughout PADEP's Southeast and Northeast regions.

Wetland Permitting Specialist, U.S. Coast Guard, Atlantic City Station Bulkhead Replacement and Dredging Improvements. Worked as a subcontractor to Han Padron to obtain all NJDEP Waterfront and USACE Section 404 and 10 Individual permits. Prepared all NJDEP sediment and water sampling plans, applications for NJDEP Dredge Material Alternative Use Determinations (AUD), water quality certifications, and completed all environmental assessment requirements of NJDEP and USACE.

Wetland Permitting Specialist, Channel Re-alignment Design, AFCEE, Pope Air Force Base, N.C. Prepared permits, specifications and designs for stream and wetland mitigation plan associated with impacts from a 40-acre "Red Ramp" for explosive cargo. Mitigation included detailed measurements, calculations, and drawings of 1100 feet of realigned stream, a 3-acre onsite wetland, and a 29-acre offsite wetland. Used **Rosgen Method** to evaluate reference reach of stream and to design a new E-5 stream. Stream cross-sections, floodplain, channel slope, meander and belt widths, and vegetation presented in plans. Bio stabilization techniques incorporated into design.

Wetland Permit Due Diligence Review, Confidential Client, Various Locations. Acting for legal counsel, performed an expedited due diligence review and oversaw corrective actions for wetland permit violations made by a Fortune 500 utility company. The actions of the utility company and its contractors violated USACE and PADEP, Clean Water Act Section 404 permits for over 100 wetland crossings in Pennsylvania and New Jersey. The utility company project, valued at over $300 million, was under a federally enforced Stop Work Order when IT Corporation was engaged by counsel to identify the nature and extent of the wetland permit violations noted by federal and state enforcement officials. Responsible for wetland site inspections, detailed ecological surveys (including detailed endangered species surveys), contractor interviews, regulatory analysis, state and federal regulatory meetings, client strategy meetings, and preparation and submission of new wetland permits. Successful in supporting counsel in its efforts to limit the financial penalties paid by the utility company and lifting the stop work order placed on the project by the federal government.

Wetland Permit Applications, Confidential Pharmaceuticals Manufacturer, East Hanover, NJ. Prepared several wetland permit applications to allow future expansion of a pharmaceuticals manufacturing plant in Morris County, New Jersey. The wetland permit applications were prepared in accordance with N.J.A.C. 7:7A and included the reclassification of several wetland areas from intermediate resource value to ordinary resource value to allow for the facility expansion.

Wetland Permit Applications, Pulverizing Services Site, Moorestown, NJ. Prepared NJDEP GP-4 permit applications to allow for the excavation, backfilling, and restoration

Key Projects (Continued)

of approximately 4 acres of wetlands contaminated with chlorinated pesticides. Performed a cost benefit analysis on behalf of the potentially responsible party (PRP) group to determine the most cost-effective permitting, excavation, and restoration techniques. Detailed wetland design plans were prepared in accordance with N.J.A.C. 7:7A.

Ecological Based Remedial Investigations/Feasibility Studies

Focused Feasibility Study, Picatinny Arsenal, Morris County, New Jersey, Project Manager. Preparation of a Focused Feasibility Study (FFS) conducted to address sediment and surface water contamination in Green Pond Brook (GPB) and Bear Swamp Brook (BSB) at the Picatinny Arsenal (PTA), Rockaway Township, New Jersey. Was tasked by the U.S. Army Corps of Engineers-Baltimore District to conduct the FFS under the Total Environmental Restoration Contract (TERC). The FFS was considered "focused" through the elimination of the remedial alternative screening task and by the focusing of remedial alternatives on contaminated sediment in GPB and BSB. Successfully negotiated with regulators overseeing the project that impacted surface water would require no further action since it will be addressed through the evaluation of remedial alternatives for sediment, remediation of individual sites at PTA, attenuation of contaminants to sediments, dispersion of contaminants at low levels in the surface water matrix, and degradation of organic compounds. Selected FFS over a standard FS described by U.S. EPA (1988) based on site-specific conditions at GPB and BSB and remedial action objectives, which made only a few remedial alternatives practical at the site. Site contaminants included VOCs, SVOCs, pesticides, metals, and PCBs.

Development of Natural Resource Management Plan, Pinelands National Reserve. Developed a natural resource management plan for 1,600-acre Stockton State college campus, located in the Pinelands of New Jersey. Performed extensive natural resource investigations and summaries for soils, vegetation, wildlife, and surface and groundwater contained in the Pinelands National Reserve. Conducted fund raising ($7,000 raised through donations) and established the Stockton State College Outdoor Environmental Education Center. Incorporated Natural Resource Management Plan into the master plan of the college. Was awarded the 1990 Nongame and Endangered Species Program Grant for management of endangered plant and animal species, including the Pinelands Pitcher Plant, and various raptors including the Osprey and Barred Owl.

Site Selection Studies

Project Manager, Long Island Intracoastal Waterway Dredged Material Site Selection Study, USACE, New York District. Weston Project Manager performing dredged material placement siting study using GIS and field verification techniques. Reviewed available in-house and publicly accessible GIS data to determine and identify potential placement sites based on engineering, logistical and environmental considerations. Utilized an aerial photography, Suffolk County real property database

Key Projects (Continued)

information, and New York State Department of Environmental Conservation Tidal Wetland maps, and available geotechnical data. Assessed and **identified tidal wetlands habitat throughout** project area. Established a "Team Link" site which allowed viewing of over 350 aerial photographs and data layers in an ArcView, geospatial data format. Following identification of the sites through GIS and aerial photography, managed field verification of the viability of potential sites which consisted of visits to approximately 40 sites to verify that they are suitable for the purpose of dredged material placement and to confirm that the site(s) meet placement criteria. Prepared the documentation of findings that summarized the work undertaken, including the data review and results of field visits.

Publications and Presentations

Jaworski, M. 1987. "*Desert Processes - Eolian Formation."* Stockton State College, 24 pp.

Attachment 3: Freshwater Wetlands Letter of Interpretation – Line Verification, November 21, 2006

11/21/06
MB

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

JON S. CORZINE
Governor

Division of Land Use Regulation
P.O. Box 439, Trenton, New Jersey 08625
FAX # (609) 777-3656
Web Site:www.state.nj.us/dep/landuse

LISA P. JACKSON
Commissioner

Edward A. Kuc
Eastern States Environmental Associates
RR #3, Box 541 Mountainview Drive
Kunkletown, PA 18058

NOV 2 1 2006

RE: Freshwater Wetlands Letter of Interpretation – Line Verification
DLUR File No.: 0714-06-0004.1
Activity No.: FWW-FWLI4-060001
Applicant: Coca-Cola Enterprises
Block: 5042 Lots: 15 and 95 – 98
City of Newark, Essex County

Dear Mr. Kuc:

This letter is in response to your request for a Letter of Interpretation to verify the jurisdictional boundary of the freshwater wetlands and waters on the referenced property.

In accordance with agreements between the State of New Jersey Department of Environmental Protection, the U.S. Army Corps of Engineers Philadelphia and New York Districts, and the U.S. Environmental Protection Agency, the NJDEP, Division of Land Use Regulation is the lead agency for establishing the extent of State and Federally regulated wetlands and waters. The USEPA and/or USACOE retains the right to reevaluate and modify the jurisdictional determination at any time should the information prove to be incomplete or inaccurate.

Based upon the information submitted, and upon a site inspection conducted on October 4, 2006, the Division of Land Use Regulation has determined that the wetlands and waters boundary line(s) as shown on the plan map entitled **"WETLANDS DELINEATION MAP, COCA-COLA ENTERPRISES, LOTS 15 AND 95 THROUGH 98, BLOCK 5042, CITY OF NEWARK, ESSEX COUNTY, NEW JERSEY,"** dated November 7, 2006, unrevised, and prepared by Victor E. Vinegra, L.S. of Harbor Consultants, Inc., is accurate as shown.

Any activities regulated under the Freshwater Wetlands Protection Act proposed within the wetlands or transition areas or the deposition of any fill material into any water area, will require a permit from this office unless exempted under the Freshwater Wetlands Protection Act, N.J.S.A. 13:9B-1 *et seq.*, and implementing rules, N.J.A.C. 7:7A. A copy of this plan, together with the information upon which this boundary determination is based, has been made part of the Division's public records.

Pursuant to the Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A-1 *et seq.*), you are entitled to rely upon this jurisdictional determination for a period of five years from the date of this letter.

The freshwater wetlands and waters boundary line(s), as determined in this letter, must be shown on any future site development plans. The line(s) should be labeled with the above DLUR File number and the following note:

"Freshwater Wetlands/Waters Boundary Line as verified by NJDEP PI No.: 0714-06-0004.1."

In addition, the Department has determined that the wetlands on the subject property are of Intermediate and Ordinary resource values. The Ordinary values are noted on the referenced plan by the following wetlands location points: A1 – A25, B1 – B25, W1-1 – W1-6 and W2-1 – W2 -8. There is no standard transition area required adjacent to Ordinary value wetlands. The remaining wetlands C1 – C6 and D1 – D4 are Intermediate value wetlands and the standard transition area or buffer required adjacent to these wetlands is 50 feet. The Department has also identified State Open Waters on the property, they are noted on the referenced plan by the following points: E1 – E15 and F1 – F15. Please note that a buffer is not required adjacent to State open waters under the Freshwater Wetlands Projection Act, but a 25-foot buffer is required under the Flood Hazard Area Control Act. These classifications may affect the requirements for an Individual Wetlands Permit (see N.J.A.C. 7:7A-7), the types of General Permits available for the wetlands portion of this property (see N.J.A.C. 7:7A-5) and the modification available through a transition area waiver (see N.J.A.C. 7:7A-6). Please refer to the Freshwater Wetlands Protection Act (N.J.S.A. 13:9B-1 *et seq.*) and implementing rules for additional information.

It should be noted that this determination of wetlands classification is based on the best information presently available to the Department. The classification is subject to change if this information is no longer accurate, or as additional information is made available to the Department, including, but not limited to, information supplied by the applicant. Under N.J.S.A. 13:9B-7a(2), if the Department has classified a wetland as exceptional resource value, based on a finding that the wetland is documented habitat for threatened and endangered species that remains suitable for use for breeding, resting or feeding by such species, an applicant may request a change in this classification. Such requests for a classification change must demonstrate that the habitat is no longer suitable for the documented species because there has been a change in the suitability of this habitat. Requests for resource value classification changes and associated documentation should be submitted to the Division of Land Use Regulation, P.O. Box 439, Trenton, New Jersey 08625.

This letter in no way legalizes any fill, which may have been placed, or other regulated activities, which may have occurred on-site. Also this determination does not affect your responsibility to obtain any local, State, or Federal permits which may be required.

In accordance with N.J.A.C. 7:7A-1.7, any person who is aggrieved by this decision may request a hearing within 30 days of the decision date by writing to: New Jersey Department of Environmental Protection, Office of Legal Affairs, Attention: Adjudicatory Hearing Requests, 401 East State Street, P.O. Box 402, Trenton, NJ 08625-0402. This request must include a completed copy of the Administrative Hearing Request Checklist.

Please contact Cathryn Schaffer of our staff at (609) 777-0454 should you have any questions regarding this letter. Be sure to indicate the DLUR file number in all communication.

Sincerely,

Andrew Clark, Supervisor
Bureau of Inland Regulation

c: City of Newark Construction Official